DOCUMENT RESUME

ED 425 569 EC 306 827

TITLE	Asthma Education: An Integrated Approach. Ideas for Elementary Classrooms.
INSTITUTION	Minnesota State Dept. of Health, St. Paul.
SPONS AGENCY	Health Resources and Services Administration (DHHS/PHS), Washington, DC. Maternal and Child Health Bureau.
PUB DATE	1998-00-00
NOTE	131p.
CONTRACT	MCJ-27R021
AVAILABLE FROM	Minnesota Department of Health Library, 717 Delaware Street, S.E., P.O. Box 9441, Minneapolis, MN 55440; Tel: 800-728-5420 (Toll Free); Tel and Fax: 612-676-5385; e-mail: library@health.state.mn.us ($15).
PUB TYPE	Guides - Non-Classroom (055)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	*Asthma; *Child Health; Chronic Illness; Curriculum Guides; Elementary Education; *Etiology; Incidence; Lesson Plans; Peer Acceptance; Special Health Problems; *Symptoms (Individual Disorders); Units of Study
IDENTIFIERS	*Disability Awareness

ABSTRACT

This manual contains lesson plans for teaching all children how to monitor their own health and for teaching children with asthma how to play a role in the management of their condition. Each lesson plan is compatible with existing traditional elementary curricula for math, science, health, or language arts. After an introduction that discusses the incidence of childhood asthma and provides questions and answers about the asthma teaching unit, the next section contains some basic background information about asthma, including its symptoms, triggers, and treatments. Information about using the peak flow meter (a small, hand-held tube that measures the ability of the lungs to exhale air) as an asthma teaching tool is provided. The next section contains introductory math, language arts, and science lesson plans. All of the lesson plans contain activities to engage students and include enhancement ideas to expand the lessons. Many of the lessons provide accompanying camera-ready worksheets found in the next section. The last section contains organizations that can be contacted for more information about asthma, as well as listings of: books, guides, curriculum and videos for teachers; books for children; and videos for children. (CR)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

Asthma Education: An Integrated Approach

ED 425 569

PERMISSION TO REPRODUCE AND
DISSEMINATE THIS MATERIAL HAS
BEEN GRANTED BY

O'Fallon

TO THE EDUCATIONAL RESOURCES
INFORMATION CENTER (ERIC)
1

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION
CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

EC 306 827

Acknowledgments

"Asthma Education: An Integrated Approach" was made possible through the support of Project ACCORD (Advancing Child Centered Outcomes through Relationship Development), a federal Maternal and Child Health Bureau grant. This grant (MCJ-27R021) was awarded to the Minnesota Department of Health, Section of Children with Special Health Care Needs, in the Fall of 1994. Project ACCORD was designed to explore issues of quality assurance for children with special health care needs as they enroll in managed care systems, and has been implemented in cooperation with HealthPartners Research Foundation. Principal investigators for this grant were Jan Jernell (Minnesota Department of Health) and Sharon Rolnick (HealthPartners Research Foundation); Project Coordinators were Ann O'Fallon (Minnesota Department of Health) and Sharon Kaufer Flores (HealthPartners Research Foundation).

We would like to acknowledge the many teachers and administrators who worked with us to create the lesson plans in this manual. From Hans Christian Andersen School of Many Voices, we thank the following individuals: Barbara Shin (principal, Elementary School); Tom Shaefer (principal, Open School); Jan Nethercut (curriculum coordinator); Barbara Owens and Vicki Sommers (multi-cultural advisors); Lisa Hartmann, Shawntel Jenkins, Kathy Peterson, and Mary Hill (teachers); Jane Thompson (social worker); and Anna Ruth (health educator). From Windom Open School, we wish to acknowledge the following individuals: Kathy Burke (principal), and Mary Jo Straub, Leni Heinen, Helene Perry, Joe Alfano, Mary Moreira, and Steve Date (teachers). All offered their time and expertise, and provided their classrooms as pilot sites for testing these lesson plans.

We would like to thank members of the medical community for their role in the development and completion of this undertaking, including Nicole Lurie, MD, University of Minnesota Schools of Public Health and Medicine, for her inspiration and early conception of this project and her support throughout the process; Gail Brottman, MD, Hennepin County Medical Center, Department of Pediatrics, for her work educating the teachers about asthma; and Richard Sveum, MD, Park Nicollet Allergy Clinics, for his help in the editing process.

Maureen Convey (Center for Health Promotion, HealthPartners) and Nell Collier (principal, Shingle Creek Elementary) served as reviewers of this manuscript and their effort is gratefully acknowledged.

Finally, we also thank the many children in both Andersen Schools and the Windom Open School for their participation in the project. Their enthusiasm for the lesson plans kept the project on track and moving forward.

Please feel free to make copies of any of the materials contained in this manual.

Table of Contents

Introduction 3
Teaching about asthma in your classroom 5
Our experience 6
Questions about the asthma teaching unit 8
What's included in this manual 10

FYI: Asthma and Peak Flow Meters 11
What is asthma? 12
What is a peak flow meter? 15
Sample letter to parents 20

Lesson Plans 21

Introductory Lessons

Introducing Asthma 23
What Do We Know About Asthma? 27
Become a Meter Reader 31
Asthma — You or Someone You Know 35
The Trigger Factor 39

Math Lessons

Making Fractions 43
Figuring Average, Median, Range and Mode 47
Making Bar Graphs, Line Graphs and Pie Charts 51
Analyzing Individual Data 55
Compiling and Analyzing Group Data 59

Language Arts Lessons

Feelings and How to Express Yourself 63
Asthma Vocabulary and Spelling 67
Friends Helping Friends 71

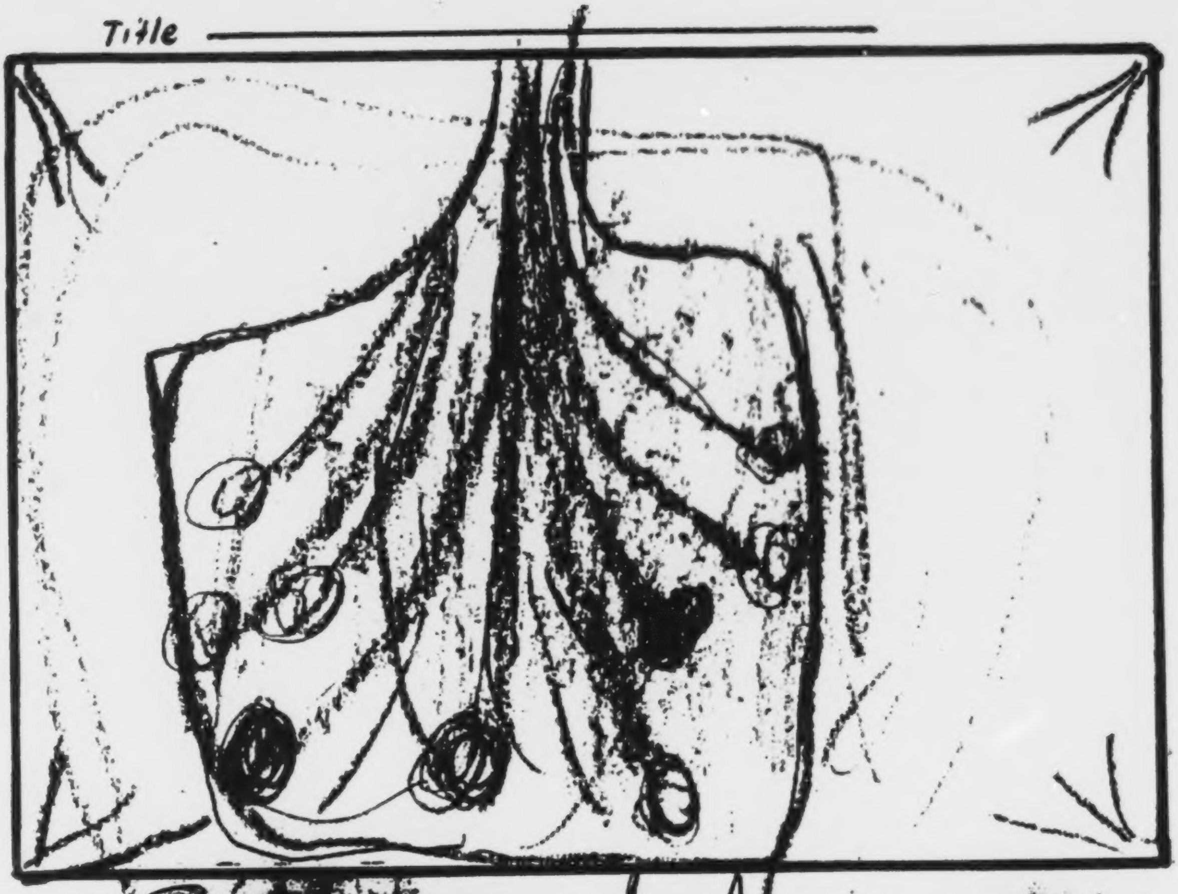
Science Lessons

Making a "Grape Stem" Lung Model 75
Making a "Bottle and Balloon" Lung Model 79
Making a "Two Balloon Lung" Take-Home Model 83
Making a "Lung People" Model 87

Camera-Ready Worksheets 91

Resources 93

Title



2 [illegible] help you Breathe. I breathe Wi[illegible] my hose and mouth.

Introduction

Teaching about asthma in elementary classrooms makes good sense. Asthma is the number one reason for school absences and the most common chronic childhood illness in this country. Even when children with asthma are in school, they often don't feel well and can't concentrate on their school work or fully participate in normal activities such as gym classes and field trips.

Teaching about asthma in your classroom 5

Our experience 6

Questions about the asthma teaching unit 8

What's included in this manual 10

BEST COPY AVAILABLE

With the help of a parent volunteer (who was also a physician), we gave students an opportunity to observe first-hand the actual organs involved in respiration by dissecting a pig heart and lung. We notified parents in advance, letting them know that alternative arrangements would be made to accommodate individual needs. For my students, this activity provided a unique learning experience that they will remember for a lifetime.

— 3rd grade teacher

School personnel and health care providers are increasingly aware of the role that teachers can play in the management of childhood asthma. However, teachers have many demands on their time, and they need a new approach if they are to add another valuable activity to their school day.

"Asthma Education: An Integrated Approach" was developed in response to this concern. The lessons contained in this manual were created by teachers and tested in their elementary classrooms. Each lesson plan is compatible with existing traditional elementary curricula for math, science, health, or language arts. The teachers designed the lesson plans, which meet state education standards, to be simple and easy to use. The lesson plans provide an opportunity to teach all children how to monitor their own health and to teach children with asthma how to play a role in the management of their condition.

Children who are chronically absent from school because of asthma, and those who are present but not feeling well, are at an enormous disadvantage for learning.

Teaching about asthma in your classroom

Nearly five million children in this country have asthma, and studies show that this number is on the rise. Within just the past 15 years, the rate of asthma among children has increased by nearly 60 percent. As many as 20 percent of kids living in inner-city neighborhoods have asthma; the average national rate is 7 to 10 percent.

Some of these children come from homes where their asthma is understood and well managed. Many children, however, come from homes where families don't recognize asthma as a health concern, asthma has not been diagnosed, or socioeconomic and environmental factors work against good management of this condition.

BEST COPY AVAILABLE

The good news is that recent medical advances provide effective ways to manage asthma. While asthma cannot be cured, it almost always can be managed so that children can stay active and healthy. The lesson plans contained in this manual are not intended to replace school-based asthma education programs; rather, they offer teachers a way to incorporate teaching about asthma and asthma management techniques into educational curriculum in a classroom setting. This approach offers the benefits of:

- Reaching the largest number of children by including everyone in the classroom. Children who do not have asthma themselves may have friends or relatives who do, and the information can be passed along to them;

- Presenting education about asthma as a mainstream health issue, reducing the possibility of stigma being attached to children with this diagnosis;

- Teaching children the importance of on-going self-care and the responsibility that each person has to actively participate in his or her own health; and

- Providing "real life" examples that allow students to fully integrate their learning experience.

A number of school-based asthma education programs have been designed, but most require students to be away from the classroom or to stay after school. These methods may stigmatize children, and more importantly, fail to reach children whose asthma is not diagnosed.

Our experience

Several years ago, parents at an inner-city public school in Minneapolis became very concerned about the high rate of absenteeism: 10 to 20 percent on any given day. Further investigation revealed an astonishingly high rate of asthma (17 to 20 percent) among their student population.

Project ACCORD (Advancing Child Centered Outcomes through Relationship Development), a grant funded by the Maternal and Child Health Bureau, began working with teachers and health educators at three Minneapolis public elementary schools to address this concern through the development of an asthma teaching unit. It was hoped that with more education and information about asthma monitoring techniques, children would achieve better asthma management, better health, and improved school attendance.

Teachers who expressed interest in the project were hired as consultants by Project ACCORD, and they began to design lesson plans that fit within the curriculum being used in their classrooms. All teachers involved in this project based their work on having their students use peak flow meters for 10 days; data was collected using a Daily Breath Measurement Record (see Worksheet #1). Teachers used one peak flow meter for every five children, with a disposable mouthpiece for each student.

The teachers developed their ideas in a number of ways. Some teachers applied the concept in math classes, asking their students to analyze the data they collected. Some teachers used the opportunity in health and science classes to teach about basic lung anatomy, the respiratory system, and how asthma affects the lungs. Other teachers incorporated the information in lessons about pollution and the health hazards of smoking. Some classrooms applied the ideas in language arts, creating school-based scenes involving asthma, followed by the creation and production of plays that were performed in various classrooms.

My students loved working on the bar and line graphs in math class because they were analyzing their own breath measurements, their very own data. — 4th grade teacher

Questions about the asthma teaching unit

Here are answers to some common questions teachers may have about incorporating asthma education into their elementary classrooms.

What is the role of the peak flow meter?

Some of the lesson plans in this manual incorporate the use of a peak flow meter. This small, hand-held tool measures the ability of the lungs to exhale air, which helps people with asthma monitor their breathing problems and avoid situations that could make their asthma worse. The regular use of a peak flow meter can help people with asthma identify when a change is taking place in their lungs, even before they begin to have symptoms. This can help them take an active role in managing their asthma and communicate more effectively with health care providers. The peak flow meter can be an important component of asthma management. More detailed information about peak flow meters is available starting on page 15. If you can use peak flow meters to complement teaching about asthma, you will have the greatest impact on your students.

Why teach all children about peak flow meters?

All students will benefit from learning to use a peak flow meter. They can measure their lungs actively exhaling air, learn more about their anatomy and their individual breathing patterns, and expand their vocabulary about the respiratory system. They also can learn to collect personal data in a simple, practical way. Tips for getting peak flow meters for your classroom can found on page 19.

> Young children have a natural curiosity about the body — what's inside and how it works. Our asthma project provided an exciting, educational, and creative study about asthma and answers to many of their questions.
>
> — 2nd grade teacher

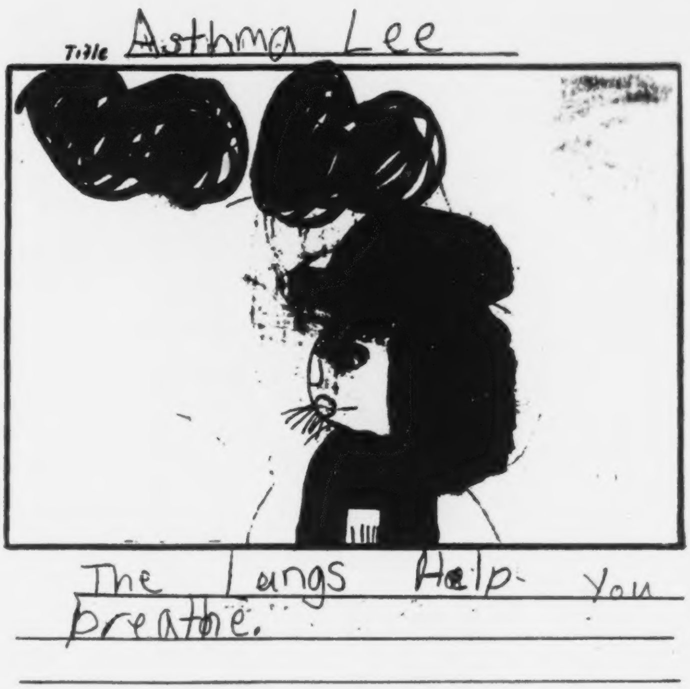
As the leading cause of school absences, asthma accounts for more than 109 million lost school days every year.

What if I can't or don't want to use peak flow meters in my classroom?

Not all of the lesson plans contained in this guide involve using peak flow meters. If you can't get peak flow meters or don't want to use them, choose lesson plans that don't require peak flow meters, or adapt any of the lesson plans to fit your classroom situation and the resources you have.

What if I think a child in my classroom may have undiagnosed asthma?

It is very possible that you may identify a child who shows some symptoms of asthma during your asthma teaching unit. We recommend that you send a letter to parents (see the sample on page 20) at the beginning of the asthma teaching unit, and that you send the Daily Breath Measurement Record (Worksheet #1) home to help parents become involved. Some students may have had breathing problems all of their lives; they and their parents may believe that this is normal. There may be many reasons why asthma hasn't been properly diagnosed. If a child in your classroom has symptoms that are consistent with asthma, contact your school nurse for advice.


Title
Asthma Lee
The Lungs Help You breathe.

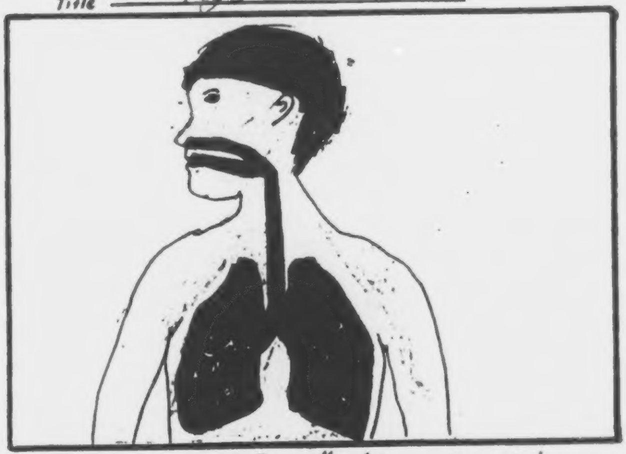
What's included in this manual

This manual contains a variety of materials to help teachers develop an asthma teaching unit for their elementary classrooms. The actual sections include:

These lesson plans are simple and flexible. They help reduce the stigmatizing of children with asthma and enhance learning about asthma for all students.

Amay

Title Lungs



Lungs ~~breathe in air~~
~~Lungs~~ breathe in
the air from all
around us. The air
is called oxyen
when it's in the
lungs. When you breath
out it's carbon dioxide

■ FYI on asthma and peak flow meters

You may want to refer to this section for basic information about asthma, including symptoms, triggers, and management techniques. If you would like to use peak flow meters in your classroom, this section includes detailed information about how to use them, why they are useful, and where to obtain them.

■ Lesson plans

This section includes the lesson plans developed through Project ACCORD by teachers in the Minneapolis public schools. They are organized by subject matter: introductory lessons, math, language arts, and science.

■ Camera-ready worksheets

This section contains more than 20 worksheets you can photocopy and use to complement the asthma lesson plans.

■ Resources

This section provides the names of organizations you can contact for more information about asthma, as well as a listing of books, videos, and other teaching materials you can use in your classroom.

FYI: Asthma and Peak Flow Meters

This section contains some basic background information about asthma, including its symptoms, triggers, and treatments. You can apply this information to any of the lesson plans, or use it to design your own. Along with additional information about asthma, you'll find specifics on using the peak flow meter (a small, hand-held tube that measures the ability of the lungs to exhale air) as an asthma teaching tool. We have included a sample letter you can send to parents to introduce the asthma teaching unit. Next to worksheets #16 and #17, we have provided common peak flow meter readings for elementary children.

What is asthma? 12

What is a peak flow meter? . . . 15

Sample letter to parents 20

What is asthma?

Asthma is a chronic disease that affects the airways within the lungs. It cannot be cured, but it can be controlled with proper, long-term treatment. People with asthma have:

- Super-sensitive airways. Their airways react to certain things (called triggers) such as having a cold or being exposed to cigarette smoke, pollen, or cold air.
- Airways that become inflamed and swollen.
- Airways that sometimes become narrow and blocked. This causes wheezing, coughing, or difficulty breathing.

Griselda

Title ASthba

Lungs Hap you breathe

What are the symptoms of asthma?

The main symptoms of asthma include:

- Shortness of breath (or breathlessness)
- Wheezing
- Tightness in the chest
- Coughing that lasts for more than one week

Not all people with asthma experience wheezing. For some, coughing may be the only symptom of asthma. The coughing often occurs during the night or after exercise.

It's important to emphasize that treatment can prevent or reverse asthma symptoms. Even mild symptoms of asthma can be treated to prevent them from getting worse. In fact, according to the National Institutes of Health, almost all people with asthma can become free of symptoms with proper treatment and ongoing management.

What happens during normal breathing?

When we breathe in, air enters through the nose and mouth. It moves down the windpipe through tiny airways and into air sacs. When we breathe out, air leaves our lungs in the reverse order.

What happens during an asthma episode?

During an asthma episode, changes in the tiny airways block the flow of air, making it harder to breathe. These changes can occur because:

- The lining of the airways becomes swollen or inflamed.
- The airways produce a thick mucus.
- The muscles around the airways tighten and make them narrower.

This is why some asthma medications work to relax the airways, while other medications work to reduce (and even prevent) the swelling and production of mucus.

With proper treatment and ongoing management, almost all people with asthma can become free of symptoms.

What causes asthma?

The basic cause of asthma is not yet known. Scientists believe that most people with asthma are born with a genetic tendency to develop it. Some people develop the signs and symptoms of asthma when they are very young; others don't develop it until they are older. Asthma is not something that is passed from one person to another. It also is not "all in one's head." Asthma is a chronic lung disease.

What causes asthma episodes?

People with asthma have airways that are supersensitive to things that do not bother people who do not have asthma. These things are called triggers. When a person with asthma becomes exposed to a trigger, the trigger may "turn on" the person's asthma. The airways may become swollen, produce too much mucus, and tighten up. Each person's asthma triggers are different.

Common triggers include:

- Smoke from cigarettes or from burning wood, paper, or other items
- Colds or flu
- Dogs, cats, or other animals
- Pollen from trees, grasses, and weeds
- Dust or mold
- Strong odors from perfumes, paints, sprays, or other items
- Changes in weather, such as temperature, pressure, and humidity
- Air pollution
- Crying, laughing, or yelling
- Exercising
- Cockroaches

Identifying each person's triggers — and then avoiding or controlling exposure to these known triggers — is an essential part of asthma management.

How can asthma episodes be prevented or managed?

People with asthma and their health care providers can develop an action plan to prevent asthma episodes from occurring, or to manage them effectively when they occur.

To prevent asthma episodes, people who have asthma may need to:

- Plan ways to avoid or reduce contact with their triggers.
- Take certain medications every day to keep them from developing symptoms.

To manage asthma episodes, people who have asthma and their health care providers should have a plan in place to:

- Take certain medications to treat symptoms when they first occur.
- Know when a doctor's help is needed.

With proper treatment, most people with asthma will be able to prevent or manage their symptoms. This means that they will be able to be active during the day, and sleep through the night without coughing, shortness of breath, or wheezing. In conclusion, asthma control means having lungs and open airways that work well.

What is a peak flow meter?

A peak flow meter is a small, hand-held tool that is used to measure how well air moves out of the lungs. The rate at which air is exhaled through the lungs is indicated by a "peak flow meter reading." Peak flow meter readings vary considerably, and each person's peak flow meter reading will be different. Height, weight, gender, and other factors can all affect peak flow meter readings.

How is the peak flow meter used to manage asthma?

For a person who has asthma, the peak flow meter reading can indicate if there is a narrowing in the airways hours — sometimes even days — before any asthma symptoms develop. This is because the airways of the lungs usually begin to narrow very slowly when an asthma episode begins. The advantage of using a peak flow meter is that the person with asthma can take medications early — before symptoms ever develop — and stop the episode quickly or prevent it from becoming a serious asthma episode.

Asthma is different for everyone. By identifying a "personal best" peak flow meter reading (the highest number ever achieved), and then measuring with the peak flow meter every day, this tool can help people with asthma, their families, and their health care providers learn what makes asthma worse, decide if the treatment plan is working well, decide when to add or stop medication, and decide when to seek emergency care.

How can the peak flow meter be used in a classroom setting?

The peak flow meter is simple to use in a classroom setting. This tangible tool reinforces the concepts in the asthma teaching unit, and gives students personal data about how well they are breathing. It also forms the basis for some of the lesson plans that provide hands-on math and data analysis.

Regardless of whether or not students have asthma, they will learn:

- How to read a peak flow meter.
- Their "personal best" peak flow number.
- The factors that affect their breathing.
- The direct effect that asthma has on the lungs and on breathing.
- How this tool helps people with asthma measure how well they are breathing.

How should your students use a peak flow meter?

To use the peak flow meter in your asthma teaching unit, you will want to have one peak flow meter for every five students, and one mouthpiece for every student. Before you begin, remind students that everyone is unique in terms of height, weight, and gender, and that each person also will have a unique peak flow meter reading. Explain that the goal is to find their own "personal best," not to have the highest number in the class. To discourage students from comparing numbers, ask them to use a code name to record their peak flow meter readings, especially if you will be collecting group data later.

> Using the peak flow meter in my classroom gave students first-hand experience in collecting and analyzing data. I gave each student a folder with a code name on the front cover in which to record peak flow numbers. My purpose was to ensure some sort of data privacy, and to eliminate any emotions when analyzing group data. I explained that the use of code names for participants is frequently used in the world of research to remove any bias from the study. During our math unit, I found that when students worked with data that they generated themselves, the terms average, median, mode, and range — along with the need for accuracy — became much more significant.
>
> — 5th grade teacher

To measure peak flow, instruct students to follow these steps:

1 Slide the little marker down as far as it will go. This sets the meter to zero.

2 Stand up. Take a big breath with your mouth open. Hold the meter in one hand. Keep your fingers away from the numbers.

3 Quickly close your lips firmly around the tube. Do not put your tongue in the hole. Blow one time as fast and hard as you can.

4 The marker will go up and stay up. Do not touch the marker. Find the number where the marker stopped.

5 Write the number on a piece of paper or on a chart.

6 Blow two more times. Push the bottom down each time. Write the number down each time.

This section has been adapted from National Institutes of Health materials.

How can peak flow meter readings be used?

If you decide to use the peak flow meter as a teaching tool, you will want to have students gather data for at least 10 days. Ten peak flow meter readings will give students a good picture of how well they are breathing. These numbers will be more meaningful to students, however, if they can associate them with symptoms of breathing problems. In this way, for example, they can connect a low peak flow reading to a day on which they were exposed to cigarette smoke or experienced a lot of coughing. Likewise, they can connect a high peak flow reading (and their "personal best") to a day in which they had no — or fewer — breathing problems or exposure to harmful triggers.

> I knew our asthma project had made an impact when a student approached me on the playground, so excited to point out the similarity between the shadow of a large tree with many branches and the airways in the lungs.
>
> — 3rd grade teacher

The "Daily Breath Measurement Record" was designed as a self-assessment tool to complement the use of the peak flow meter. A sample appears below; a copy you can use appears in the Camera-Ready Worksheet section of this guide (see Worksheet #1).

Worksheet #1: Daily Breath Measurement Record

Keep this record in a safe place. Fill it in every day.
Mark "Y" for yes if you are having breathing problems.
Mark "N" for no if you are not having breathing problems.

Name/Code GG-2 Date ____________

DAY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1) Cough during the day	Y	N	Y	N	Y	Y	N	N	N	N
2) Cough during the night	Y	N	Y	N	N	Y	N	Y	N	N
3) Wheezing during the day	N	N	N	Y	Y	N	Y	N	Y	N
4) Wheezing during the night	N	N	N	Y	Y	N	N	Y	N	Y
5) Short of breath with running, sports, exercise	Y	N	Y	Y	N	N	Y	Y	N	Y
6) Missed school due to breathing problems	N	N	N	N	N	N	N	N	N	N
7) Took extra medicine for breathing problems	N	N	N	N	N	N	N	N	N	N
8) Exposed to cigarette smoke	Y	Y	Y	Y	Y	Y	Y	Y	N	Y
Peak Flow Meter Readings	300	400	550	300	450	550	600	425	325	400

Project ACCORD 1998

Where can I obtain peak flow meters to use in my classroom?

A good starting point for obtaining peak flow meters is to make a connection with the health plans in your area that provide health care services to the children in your classroom. Most health plans have a patient/community education or health promotion department; these departments may be able to help you find a source that will donate peak flow meters to your school. The nurse at your school may be able to help you identify which health plans provide coverage to the most children in your area.

Other places to try include children's hospitals, specialty clinics, and asthma groups in the community such as your local chapter of the American Lung Association. If these organizations are unable to assist you directly, they may be able to point you in the right direction. Ask them for the names of local pediatric home equipment vendors who also may be willing to contribute peak flow meters. Many organizations are interested in supporting health education in schools and would welcome the opportunity to be involved. Remember to give credit to any group that contributes toward your effort.

Sample letter to parents

Dear Parents:

During the next several weeks, we will be talking about asthma in our classroom. Every year, more and more children are finding out that they have asthma. Problems related to asthma are the biggest reason that children are absent from school.

The good news is that, with regular medical care and the right treatment, children with asthma can live active, healthy lives. We want you to know about the symptoms of asthma, too.

Some families may not know that their child has asthma. Here are some of the common symptoms of asthma:

- A cough that lasts a long time after a cold
- Coughing all day long
- Coughing during the night or early morning
- Coughing, wheezing, chest tightness, or shortness of breath after exercise or activity in cold, windy weather
- Little energy for active play

Other families may know that their child has asthma, but may not be sure if they are treating it right. Here are some symptoms of asthma that is not being managed well:

- Your child takes asthma medications, but still has ongoing symptoms
- Your child takes extra asthma medications to stop symptoms

If you notice any of these signs, you may want to talk to your child's health care provider or our school nurse for more information.

Sincerely

(Name of Teacher)

This letter has been adapted from National Institutes of Health materials.

Lesson Plans

In this section, you will find lesson plans that you can use within your classroom to promote education about asthma. The lesson plans were designed to be integrated easily into an existing elementary curriculum. They also were designed to be hands-on, practical, and flexible. All of the lesson plans contain activities to engage students with enhancement ideas to expand the lessons. You may want to combine lessons, change them, or add to them to suit your needs. Many of the lessons provide accompanying worksheets, which are found in camera-ready form in the next section.

Introductory Lessons . 23

Math Lessons 43

Language Arts Lessons 63

Science Lessons 75

BEST COPY AVAILABLE

We've organized the lesson plans as follows:

Introductory lessons — These five lesson plans give you a starting point to begin teaching about asthma in your classroom.

Math — These four lesson plans give students practical, hands-on experience in data analysis by applying the results of their peak flow meter readings.

Language arts — These three lesson plans incorporate spelling, script-writing, role-playing, and thinking about feelings to reinforce asthma education.

Science — These four lesson plans show students the inner workings of the lungs to improve their understanding of the human body, as well the effect of asthma on the lungs.

Introductory Lesson #1

Introducing Asthma

To understand how it feels to have asthma, students breathe through an open straw, then through a pinched straw. They also can breathe through a paper towel to better understand asthma symptoms.

Grade level: **1-6**

Length: .... **30-60 minutes**

Objectives

The students will:

- experience asthma symptoms by breathing through a pinched straw or a paper towel;
- assess their understanding of asthma;
- compare the makeup of the lungs to that of many tiny straws;
- understand that asthma is a disease that affects the way we breathe; and
- learn that asthma, like other chronic conditions, cannot be cured — but it can be controlled successfully.

Materials

- One drinking straw for each student
- Roll of paper towels (thicker ones work best)
- Worksheet #1, "Daily Breath Measurement Record"
- Worksheet #2, "Asthma I.Q."
- FYI section of this guide (see page 11)

Procedure:

1 Distribute a drinking straw and a paper towel section to each student. Instruct students to inhale and exhale through the straw. Ask … "Was this easy or hard?"

2 Have students pinch the straw and inhale and exhale through the pinched straw. Ask … "Was this easy or hard?"

3 Instruct students to place the paper towel over their mouths. Tell them to try to breathe in and out through their mouths. Have students describe what it feels like to breathe through the paper towel. Ask … "How would it feel to breathe this way for a long time? Could you run or play breathing this way? Could you get to sleep?"

4 Discuss the reasons why it was harder to breathe through the pinched straw and through the paper towel. Tell students that people with asthma have difficulty breathing that feels similar to what the class has just experienced.

5 Write the word "asthma" on the board. Ask … "Who knows what asthma is?" Encourage students to talk about what they have heard and what they know about asthma. As students offer ideas, write their ideas on the board. Distribute worksheet #2, "Asthma I.Q." to generate a discussion.

6 Have students review the ideas on the board and identify what is fact and what is fiction. Discuss the answers to the "Asthma I.Q."

7 Give students an age-appropriate definition of asthma and the role of the lungs in respiration (see the FYI section of this guide on page 11). Tell students that the lungs are made up of many tiny straws and that, when the straws get pinched, asthma symptoms develop. Give examples of asthma symptoms. Explain that asthma "triggers" pinch the breathing straws, and that avoiding triggers and taking medications help to open up the straws.

8 Explain the meaning of the word "chronic." Ask … "What are some examples of chronic conditions?" Discuss that while asthma cannot be cured, it can be controlled successfully. Ask … "What does asthma control involve?" Explain that people with asthma can actively manage this condition by doing some things every day, such as avoiding triggers and taking medications.

> Attempting to breathe through a thick paper towel gave my students better insight into what it's like to have asthma.
>
> — 2nd grade teacher

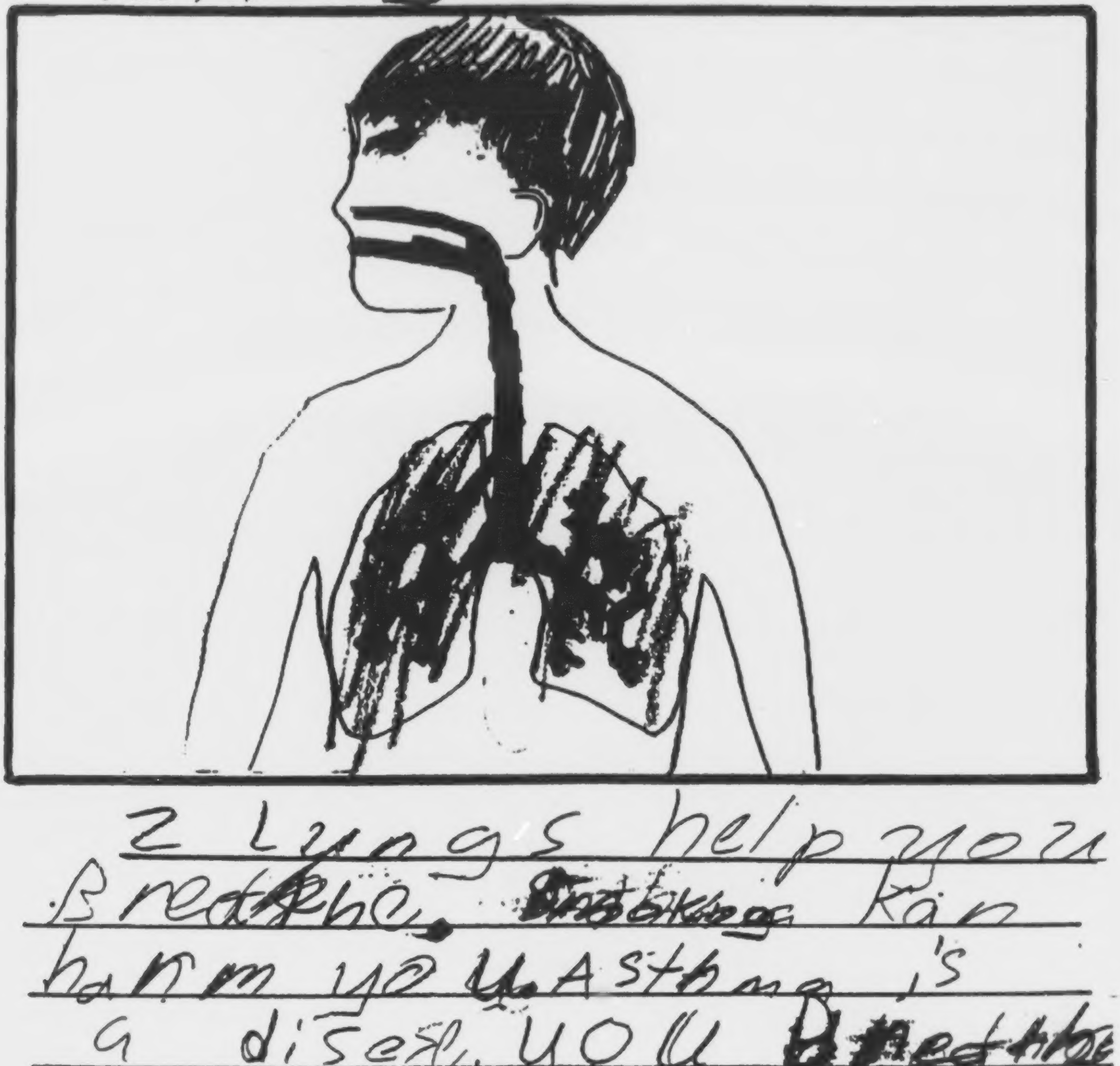
9 Distribute worksheet #1, "Daily Breath Measurement Record." Tell students to use this worksheet to record how well they are breathing. (They also can use it to record peak flow meter readings, if this will be a part of your program.)

Enhancement Activities

- Have students draw a picture of the lungs. Give them extra drinking straws to paste on the lungs.
- Have students perform some active exercises in the room (for example, 10 jumping jacks) and then repeat the straw or paper towel activity. Ask them to describe how it feels not to be able to breathe as you would like to, especially after active exercise.
- Have students interview someone who has asthma and ask them to describe how it feels.

By Aidan

Title Lungs



2 Lungs help you Breathe. Smoking kan harm you. Asthma is a disesl. You Breathe Ochigin in. You Breathe carbin diocsk out.

Introductory Lesson #2

What Do We Know About Asthma?

As young students "huff and puff" to tune in to their breathing, this lesson introduces them to asthma in terms of what they know, want to learn, and will be learning.

Grade level: **1-3**
Length: .... **30-45 minutes**

Objectives

The students will:

- become more aware of the condition called asthma;
- assess their current understanding of asthma; and
- identify what they would like to learn about asthma.

What Do We Know About Asthma?

Materials

- Any version of the story, "The Three Little Pigs"
- Worksheet #2, "Asthma I.Q."
- Video, "So You Have Asthma, Too!" (see Resources on page 100)
- FYI section of this guide (see page 11)

Procedure:

1 Read students the story, "The Three Little Pigs." Have them "huff and puff" with you throughout the story. Ask ... "What part of our body is working when we huff and puff?"

> I collected as many versions of "The Three Little Pigs" as I could find and read a different version to the class each day to begin our asthma unit. — 1st grade teacher

2 Tell students that "no body is perfect." Use analogies. For example, explain that if we can't see things, we can have our vision corrected with glasses. If we can't hear things, we can have our hearing corrected with hearing aids. If we have trouble breathing, we can have our breathing corrected by learning how to breathe well and by taking medications.

3 Explain that if we can't see things far away, we have a condition called near-sightedness. If we can't see things close up we have a condition called far-sightedness. If we have a hearing loss, we have a hearing disability. If we have trouble breathing, we may have a condition called asthma. All of these conditions can be corrected.

4 Write the word asthma on a chart. Clap out the syllables in the word asthma. Have students repeat the word.

5 Distribute worksheet #2, "Asthma I.Q." Explain that this test will help to find out what we already know about asthma. Depending on the students' reading ability, you can read the I.Q. test out loud, read it with students, or ask students to read it independently.

6 Explain that this test will help the class develop a KWL chart (K = Know, W = Want to learn, L = Learned). On the chart paper, ask students what they already know about asthma. Ask students what they want to learn about asthma. Write their responses on the chart.

7 Show the video, "So You Have Asthma, Too!," or another introductory video about asthma.

Enhancement Activities

- Keep the KWL chart posted and complete the "Learned" section as you complete other asthma teaching units.
- Have students explain why people need to wear glasses every day, why people with hearing aids need to use them every day, and why people with asthma may need to take medications every day.
- Give students worksheet #1, "Daily Breath Measurement Record." For the next two weeks, have students keep it in their back packs. Ask them to take it home every day to complete with their parents. (You may want to include the parent letter on page 20 with this worksheet. If peak flow meter readings will be a part of your program, you also can use this worksheet to record students' readings.)

Elin Title 4 The lungs

The lungs are vare frachl. You shod nevare smocke. It cRod cose asthma and your lungs cRod get black. It will be vare hode for you to. You shod takecare of you lungs.

Introductory Lesson #3

Become a Meter Reader

This lesson introduces students to the peak flow meter, a critical tool for asthma management.

Grade level: **1-6**

Length: .... **30-45 minutes**

Objectives

The students will:

- learn how to use a peak flow meter;
- understand the purpose of a peak flow meter in asthma management; and
- record data using a class chart.

Become a Meter Reader

Materials

- "I'm a Meter Reader," book and video (see Resources on page 99)
- One peak flow meter for every five students; one mouthpiece per student
- Worksheet #1, "Daily Breath Measurement Record"

Procedure:

1 Show students the video, "I'm a Meter Reader." The video shows how peak flow meters help people with asthma.

2 Read students the accompanying "I'm a Meter Reader" story. This booklet describes why people with asthma use peak flow meters, and how to use them.

3 Ask … "What is a meter reader? Why do people with asthma need peak flow meters? How would you use a peak flow meter? What happens if your peak flow number is low? When should a person with asthma take his or her medicine? How does a person with asthma know if his or her medicine is working?"

4 Demonstrate how to use a peak flow meter using the six steps that follow. You may want to repeat these steps over a one-to-three week period to show differences in peak flow readings.

How to Use a Peak Flow Meter

1. Slide the little marker down as far as it will go. This sets the meter to zero.
2. Stand up. Take a big breath with your mouth open. Hold the meter in one hand. Keep your fingers away from the numbers.
3. Quickly close your lips firmly around the tube. Do not put your tongue in the hole. Blow one time as fast and hard as you can.
4. The marker will go up and stay up. Do not touch the marker. Find the number where the marker stopped.
5. Write the number on a piece of paper or on a chart.
6. Blow two more times. Push the bottom down each time. Write the number down each time.

Source: National Institutes of Health

5 After you have demonstrated how to use a peak flow meter and reviewed these steps, break students into groups of five. Give each group a peak flow meter and give each student a mouthpiece. Ask each student to take three peak flow meter readings and record the highest number.

6 Ask students to compare/contrast the differences in their three peak flow meter readings. Have them come up to the front and write their highest number on a class chart. Reiterate that many factors affect peak flow meter readings and that there are no right or wrong numbers (see FYI section on page 11).

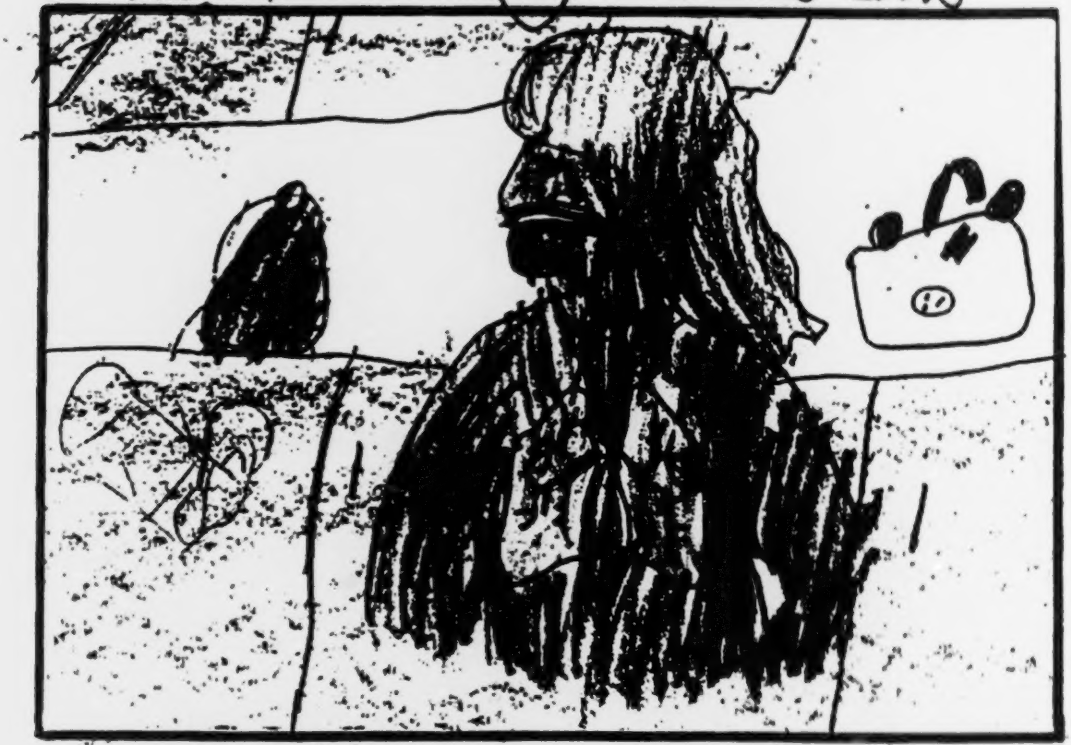
7 Give each student an "I Am a Meter Reader" award. (You may want to use the one provided at the back of the booklet, design your own, or have students design an award.)

Enhancement Activities

- Discuss the results of the class chart and sum up the process used to find peak flow meter readings.
- Have students decorate their awards and display them in the classroom.
- Distribute worksheet #1, "Daily Breath Measurement Record." For the next two weeks, have students keep it in their back packs. Ask them to take it home every day to complete the symptom section with their parents. (You may want to include the parent letter on page 20 with this worksheet.) Ask students to bring the Daily Breath Measurement Record to school every day to measure and record peak flow meter readings.
- Have students run in place, do jumping jacks, or march around the room before taking a peak flow meter reading. Ask ... "Do our lungs work harder or easier when we exercise? Did your peak flow meter reading vary from when you measured it at rest? What does this tell us about having asthma?"
- Have students keep a journal to correspond to each day's peak flow meter reading. Use the analogy to weather; for example, some days are sunny, cloudy, rainy, and so on. Ask them to record such indicators as happy, tired, energetic, sad, great, etc., to represent each day in a breathing "journal."

Sarah

Title Brething Problems



Sometimes I have a hard
time brething and my mom,
gives me some medesan tha
is called a nebuliser. It's lik
a little mask that covers you
mouth and nose. It's for people
that have asthma.

Introductory Lesson #4

Asthma — You or Someone You Know

In this introductory lesson, students learn how to use a peak flow meter to test their breathing ability.

Grade level: **4-6**
Length: .... **45-60 minutes**

Objectives

The students will:

- understand that asthma is a disease that affects the way we breathe;
- learn that asthma cannot be passed from one person to another; and
- learn what a peak flow meter is and practice using it.

Materials

- One peak flow meter for every five students, with a clean mouthpiece for every student
- Children's thermometer
- Worksheet #1, "Daily Breath Measurement Record"
- Worksheet #3, "What Do I Know About Asthma?"
- Worksheet #4, "Check Your Peak Flow Meter Readings"
- FYI section of this guide (see page 11)

Procedure:

1 Introduce students to the condition known as asthma. Ask . . . "Does anyone know what asthma is?" Tell them that we will be learning about asthma because some of us have asthma ourselves and others know people who have it. Explain that it is important to learn about asthma so that everyone can be healthier.

2 As a pre-test, give the students worksheet #3, "What Do I Know About Asthma?" and ask them to complete it. Remind them that it is O.K. if they do not know all of the answers now, because they will be learning more about asthma. Pick up the pre-test and correct them later. Keep the results to cross-check with the post-test results later.

3 Using the FYI section of this guide, introduce students to asthma. Tell them that it is a disease that affects the way we breathe. Explain that it cannot be passed from one person to another. Tell them that, although asthma has no cure, it can be controlled successfully. Explain that one way people can control their asthma is to measure how well they are breathing.

BEST COPY AVAILABLE

4 Hold up a children's thermometer. Ask students ... "Do you know what this is? What does it measure?" Next, hold up a peak-flow meter. Ask students . . . "Do you know what this is? What does it measure?" Explain that the peak flow meter measures how well we are breathing. Contrast how the numbers on the thermometer apply to all of us (e.g., a temperature over 100 degrees farenheit is considered a fever in anyone), the numbers on the peak flow meter vary from student to student.

5 Divide the students into groups of five. Provide a peak-flow meter for each group, and an individual mouth piece for every student.

How to Use a Peak Flow Meter

1. Slide the little marker down as far as it will go. This sets the meter to zero.
2. Stand up. Take a big breath with your mouth open. Hold the meter in one hand. Keep your fingers away from the numbers.
3. Quickly close your lips firmly around the tube. Do not put your tongue in the hole. Blow one time as fast and hard as you can.
4. The marker will go up and stay up. Do not touch the marker. Find the number where the marker stopped.
5. Write the number on a piece of paper or on a chart.
6. Blow two more times. Push the bottom down each time. Write the number down each time.

Enhancement Activities

- Have students write a personal testimony about themselves, someone they know, or a famous athlete who has asthma.
- Involve students in an asthma research project. Break students into small groups and assign each group an asthma topic to research and report to the class. Topics may include trigger factors, asthma symptoms, lung anatomy, the worsening problem of air pollution, the increase in teenage smoking, and so on.

6 Have students take turns using the peak flow meter and recording their numbers. Ask each student to breathe into the peak flow meter three times and to remember their highest number.

7 Pass out worksheet #1, "Daily Breath Measurement Record," and worksheet #4, "Check Your Peak Flow Meter Readings." Show students how they can record their numbers on worksheet #4 by coloring the illustrations, and then transferring the number to worksheet #1 (and answering the yes/no statements). Explain that students will measure and record their peak flow numbers for 10 days.

Answers to Worksheet #3: What Do I Know About Asthma?

1. Asthma affects the **airways** in the lungs, which are part of the **respiratory** system.
2. Four things that can make asthma worse are **cigarette smoke, pollen, animals, colds, exercise,** and **cold air**.
3. When a person is having an asthma episode, I might see signs and symptoms such as **coughing, wheezing,** and **shortness of breath**.
4. If I think I might have asthma, I can get help from people like **parents, teachers, a trusted adult, the school nurse, a doctor** or **other health care providers**.
5. Teasing can hurt feelings. I can help my friend deal with his/her asthma by **not teasing him, including him in activities, reminding him to take his medicine and helping him stay away from things that make his asthma worse**.

True or False

True Children with asthma can run and play like their friends who do not have asthma.

False I can catch asthma from a friend, just like a cold or flu.

False Furry pets are one of the things which make Kim's asthma worse, but is okay if she plays with a cat for just a little while.

False My friend with asthma probably doesn't mind if I tease him about using his medicine.

False Children with asthma have to miss a lot of school.

Adapted from the National Institutes of Health Heart, Lung and Blood Institute

Introductory Lesson #5

The Trigger Factor

Students learn how trigger factors — common things in our environment that we all may be exposed to from time to time — affect asthma. They also assemble a take-home breathing wheel as an interactive teaching tool.

Grade level: **1-3**

Length: .... **30-45 minutes**

Objectives

The students will:

- understand how trigger factors "turn on" asthma;
- be able to identify trigger factors; and
- be able to identify things that help breathing.

Materials

- Worksheet #5, "The Breathing Wheel"
- Worksheet #6, "Things That Can Make Your Breathing Difficult"
- Worksheet #7, "Things That Can Make Your Breathing Easier"
- Scissors
- One brad for each student

Procedure:

1 Turn off the lights in your classroom. When you turn them on, ask "What did the light switch do?" Do the same with another electrical device, such as a tape recorder, overhead projector, or VCR. Ask ... "What happened when I touched the switch?"

2 Tell students that asthma can be "turned on" by trigger factors. When someone with asthma encounters one of his/her triggers, the airways may become swollen, produce too much mucus, and tighten up. As an example, ask them to think what it would be like to breathe through a straw full of milkshake!

3 Explain that triggers are common things that occur in our environment, and that we have all probably been exposed to them from time to time. When someone has asthma, certain trigger factors can "turn on" their disease. Someone who does not have asthma usually will not be affected by these triggers. Tell students that an interesting thing about asthma is that everyone's triggers are different. What may "turn on" someone's asthma may not "turn on" someone else's asthma.

4 Ask ... "What things do you think could affect the way we breathe if we have asthma?" For older students, you may want to break them into small groups, and ask each small group to brainstorm a list of triggers.

5 Write students responses on the board. (For older students, have each small group share their list with the class, and write their answers on the board.) Review the list with the class. Circle the correct triggers, cross out any incorrect ones, and add triggers to the list that the class may have missed.

Common Asthma Triggers

- Smoke from cigarettes or from burning wood, paper, or other items
- Colds or flu
- Dogs, cats, or other animals
- Pollen from trees, grasses, and weeds
- Dust or mold
- Strong odors from perfumes, paints, sprays, or other items
- Weather changes or very cold air
- Air pollution
- Crying, laughing, or yelling
- Exercising
- Cockroaches

Source: National Institutes of Health

6 Distribute worksheets #5, #6, and #7 (the parts of the breathing wheel) and one brad for each student. Show students how to assemble the breathing wheel. Review both wheels: the things that can make breathing difficult and the things that can make breathing easier. Encourage students to take their breathing wheels home to share with their families.

Enhancement Activities

- Keep the list of triggers on the board. Next to each one, have students suggest how a child with asthma can limit their exposure to the trigger.
- Have students cut out pictures of triggers from magazines and add them to their breathing wheels.
- Give students some common scenarios in which a child with asthma may be unexpectedly exposed to a trigger. For example, this could include going to a friend's house and discovering a pet cat, playing hard during gym class, or going outside for recess during very cold weather. Ask students to brainstorm some ways the child with asthma can minimize being exposed to the trigger.

Title Asthma

Onday Iwas wocking to my
Frents houce and ifyou tern tree
upside down they Look Like the
branchioletree in your Longs
help you brethe. You breeth
in oxygenand breeth out
carbon diox,ide.

Math Lesson #1

Making Fractions

Students begin the data analysis process by creating fractions from their yes/no responses on the Daily Breath Measurement Record.

Grade level: **1-6**

Length: .... **30-45 minutes**

Objectives

The students will:

- learn how to create fractions from their personal data; and
- understand that fractions are a tool to analyze data.

Making Fractions

Materials

- Worksheet #8, "Fraction of Yes and No Responses"
- FYI section of this guide (see page 11)
- Each student will also need 10 days of data from worksheet #1, "Daily Breath Measurement Record"

Procedure:

1 Have students review their completed Daily Breath Measurement Records. Tell them that they can use fractions to summarize their answers on the yes/no section.

2 Explain that they will use the number 10 on the bottom of the fraction to represent the 10 days that they were using the peak flow meters and answering the yes/no questions.

3 Refer to the first symptom listed on the daily record sheet, "cough during the day." Ask students to check how many times they responded "yes" to this statement over the 10 days. Explain that if they answered "yes" three times over the 10-day period, this would translate to the fractions, 3/10 "yes" and 7/10 "no." Help them to see that the 3 "yes" responses and the 7 "no" responses equal 10/10, or the total number of days recorded. Ask ... "What would the fraction be if someone answered "yes" for all 10 days? What would the fraction be if someone answered "no" for all 10 days?"

4 Distribute worksheet #8, "Fraction of Yes and No Responses." Instruct students to count the number of "yes" responses from their 10-day Daily Breath Measurement Records for each of the symptoms. Instruct them to color in the number of days in the corresponding circle to determine the correct fraction. Have them do the same with their "no" responses.

5 When students finish, have them look at their column of "yes" fractions. Ask them to circle their highest "yes" fractions. (You may want to have students give these symptoms special attention in the data analysis lesson later in this section.)

I used this activity with my second-graders. While we hadn't talked about fractions in math, they were able to color in the segments of the pie and begin to grasp the concept of fractions. — 2nd grade teacher

Enhancement Activities

- Have students do this same activity another way. How many "yes" responses did they have on Day 1? How many "no" responses on day 1? What would the denominator be for the eight symptoms?
- Have them compare the day with the highest number of "yes" responses to their peak flow meter readings for that day. Do their peak flow meter readings change when there are more "yes" responses? Explain the link between peak flow meter readings and the number of asthma symptoms.

Alex

Title The Lungs

You can not live with out air. Your Lungs help you brethe. Thare is not a kure for Asthma yet but thare is a treatment. IF you Smoke you shood Stop. You can die. MY Grand panets Smoke.

Math Lesson #2

Figuring Average, Median, Range and Mode

This lesson gives students meaningful practice calculating statistical values using the results of their Daily Breath Measurement Records.

Grade level: **3-6**

Length: .... **45-60 minutes**

Objectives

The students will:

- apply their personal data to practice calculating average, median, range, and mode;
- use visual aids to retain these concepts in long-term memory; and
- distinguish the differences among the concepts.

Figuring Average, Median, Range and Mode

Materials

- Post-it® notes (one for each letter of five students' names)
- Calculators
- Worksheet #9, "Peak Flow Meter Readings: Average"
- Worksheet #10, "Peak Flow Meter Readings: Median and Range"
- Worksheet #11, "Peak Flow Meter Readings: Mode"
- FYI section of this guide (see page 11)
- Each student also will need 10 days of data from Worksheet #1, "Daily Breath Measurement Record"

Procedure:

1 Review the concept of average. Remind students that the average of a group of numbers cannot be smaller than the smallest number in the group, nor larger than the largest number.

2 Choose five student volunteers. Pass Post-it® notes to these students and ask them to write their names, using one Post-it® note for each letter of their names. Have them attach the letters to the blackboard in vertical rows.

3 As a class, examine the rows of letters. Ask ... "What is the name with the fewest letters? What is the name with the most letters?" Ask students to predict what the average number of letters will be.

4 Select a student to come to the blackboard and even out the columns of letters. This involves taking letters from students with longer names and placing the letters into columns with shorter names so that all of the columns have the same (or nearly the same) number of letters. This number of letters is the average number of letters in the five different names.

5 Remove the Post-it® notes and write the number of letters for each of the five names on the board. Tell the students to use their calculators, add up all of the numbers, and divide by the number of names (5). Remind students that, if their average involves a decimal, either remove the

numbers after the decimal or round the number off.

6 Ask ... "Is the average you found with your calculator the same (or very nearly the same) as the number we found when we evened out the Post-it notes?"

7 Have students review their completed Daily Breath Measurement Records. Ask them to look at their peak flow meter readings and predict what their average will be.

8 Pass out worksheet #9, "Peak Flow Meter Readings: Average." Ask students to copy their 10 peak flow meter readings onto this worksheet. Then have them calculate their average readings. (You or an advanced student may want to check the averages of each student. Reliable data is important for class graphs you can make later.)

Enhancement Activities

- Divide students into groups of 8-10. Have students write down their average, median, and mode peak flow meter reading on a small piece of paper (with no name to protect confidentially). Have each group review the small pieces of paper to calculate a group average, median and mode.
- Discuss the importance of knowing daily and average peak flow meter readings in the care of asthma.

9 Review how to calculate the median. Write the number of letters in each of the five names from the earlier exercise on the board. Then put the numbers in order from smallest to largest. Remind students that the median is simply finding the number in the middle of the line of numbers. Demonstrate how to cross off the lowest number first, then the highest number, etc., until there are only one or two numbers left. If one number remains, that is the median. If two numbers remain, students can choose which of the two is the median.

10 Distribute worksheet #10, "Peak Flow Meter Readings: Median and Range." Instruct students to copy their peak flow meter reading numbers from smallest to largest and proceed to figure out the median. Have them also complete the section of the worksheet to determine their range.

11 Pass out worksheet #11, "Peak Flow Meter Readings: Mode." To determine the mode, ask students to copy their peak flow meter reading numbers from smallest to largest. Instruct them to circle the number that is repeated the most. If several numbers are repeated equally, but no single number is repeated any more than any other number, then there are two (or perhaps more) modes. Students should circle the repeated numbers, and write the mode or modes on worksheet #11. Note that it is possible that there will be no mode if no single number is repeated. They also can represent their mode visually by completing the bar graph section on worksheet #11.

Math Lesson #3

Making Bar Graphs, Line Graphs, and Pie Charts

When students apply their personal data to these graphs and charts, they gain a more meaningful understanding of each tool's unique purpose.

Grade level: **3-6**

Length: .... **45-60 minutes**

Objectives

The students will:

- use graphs and charts to represent their personal data;
- understand the different purposes of each graph and chart; and
- create their own materials to help them analyze their personal data.

Making Bar Graphs, Line Graphs, and Pie Charts

Materials

- Worksheet #12, "Peak Flow Meter Readings: Bar Graph"
- Worksheet #13, "Peak Flow Meter Readings: Line Graph"
- Worksheet #14, "Peak Flow Meter Readings: Pie Chart"
- Colored pencils or crayons to color bars and pie chart
- FYI section of this guide (see page 11)
- Each student also will need 10 days of data from worksheet #1, "Daily Breath Measurement Record"
- One centimeter graph paper (optional)

Procedure:

1 Have students review their completed Daily Breath Measurement Records. Hand out worksheet #12, "Peak Flow Meter Readings: Bar Graph," and ask students to write their code names on it.

2 To complete the bar graph, instruct students to write their first peak flow meter readings (day #1 on their daily record sheets) in the first box at the bottom of the bar graphs. Have students do the same for days #2 through #10.

3 Have students color in the bars to correspond to their numbers. Ask … "Do you notice any patterns? What number was repeated most often?" Remind them that this number is called the mode, and that they may have more than one mode if more than one number is repeated an equal number of times.

4 Distribute worksheet #13, "Peak Flow Meter Readings: Line Graph." Explain that the line graph is another way to visually represent their data and show any patterns in the numbers that may or may not be significant.

5 Ask students to write in their peak flow meter readings for their 10 days of data. Have them plot their numbers by placing a dot at the point where each number corresponds to the number scale at the left of the graph, and to the day at the bottom of the graph.

6 After they have recorded each number with a dot, instruct students to use their rulers to connect the dots. Have students write the actual peak flow number above each dot so that the graph is easier to read.

7 To complete the pie chart, hand out worksheet #14, “Peak Flow Meter Readings: Pie Chart.” Point out that the circle has been divided perfectly into 10 pieces. Tell students that they can use this circle to determine what percent of the days they reached particular numbers. Remind students that if they were to take another same-sized circle that has been divided into 100 parts, and laid it on top of the 10-pieced circle, each of the 10 pieces would be covered with 10 skinny slices. Explain that each of the large pieces equals 10 of 100 skinny pieces, and one slice equals 10 percent of the total circle.

Enhancement Activities

- Give students one-centimeter graph paper. Have them tell you how they would create a bar graph or a line graph. Remind students that the title is most important, and that the side and bottom labels also are important.
- Have students write an explanation of what they learned from each graph.
- Consider modifying this lesson plan to be age appropriate for 1st and 2nd grade students. For example, you could summarize class data from the Daily Breath Measurement Records. Make poster-sized bar graphs, line graphs, and pie charts and have students participate in filling in the data.

8 Have students write their peak flow numbers in order, from least to greatest, one number per slice, all around the circle. Instruct them to color all of the slices, but to use the same color for any slices sharing the same number. Have students count by 10s to figure out their percentages. To check their work, have students add up all their percentages to be sure that the percentages total 100 percent.

Title The 2 Lungs

maribel

Asthma doesn't let air down in the lungs!!

[illegible]

[illegible]

Math Lesson #4

Analyzing Individual Data

In this lesson, students review their data collection tools to complete the final phase of the research process — data analysis.

Grade level: **3-6**

Length: .... **45-60 minutes**

Objectives

The students will:

- develop critical thinking and observational skills; and
- review their personal data to practice the data analysis process.

Analyzing Individual Data

Materials

- Completed worksheets #12, "Peak Flow Meter Readings: Bar Graph," #13, "Peak Flow Meter Readings: Line Graph," and #14, "Peak Flow Meter Readings: Pie Chart"
- FYI section of this guide (see page 11)
- Each student also will need 10 days of data from worksheet #1, "Daily Breath Measurement Record"

> One of my students displayed his completed Daily Breath Measurement Record, along with the bar graphs, line graphs, and pie charts he created in the asthma teaching unit, at our science fair. — 3rd grade teacher

Procedure:

1 Give students time to review their completed worksheets #1, #12, #13, and #14. Explain that this lesson will introduce them to data analysis, and that they will analyze their personal data.

2 Ask students to review how many "yes" responses they recorded, and for which symptoms, from worksheet #1, "Daily Breath Measurement Record."

3 Ask students to note whether they see a particular pattern in their numbers from their bar graph and line graph.

4 Ask students to identify the range of their numbers, giving the lowest number and the highest number. Ask them to note their most frequent numbers and their average peak flow meter readings.

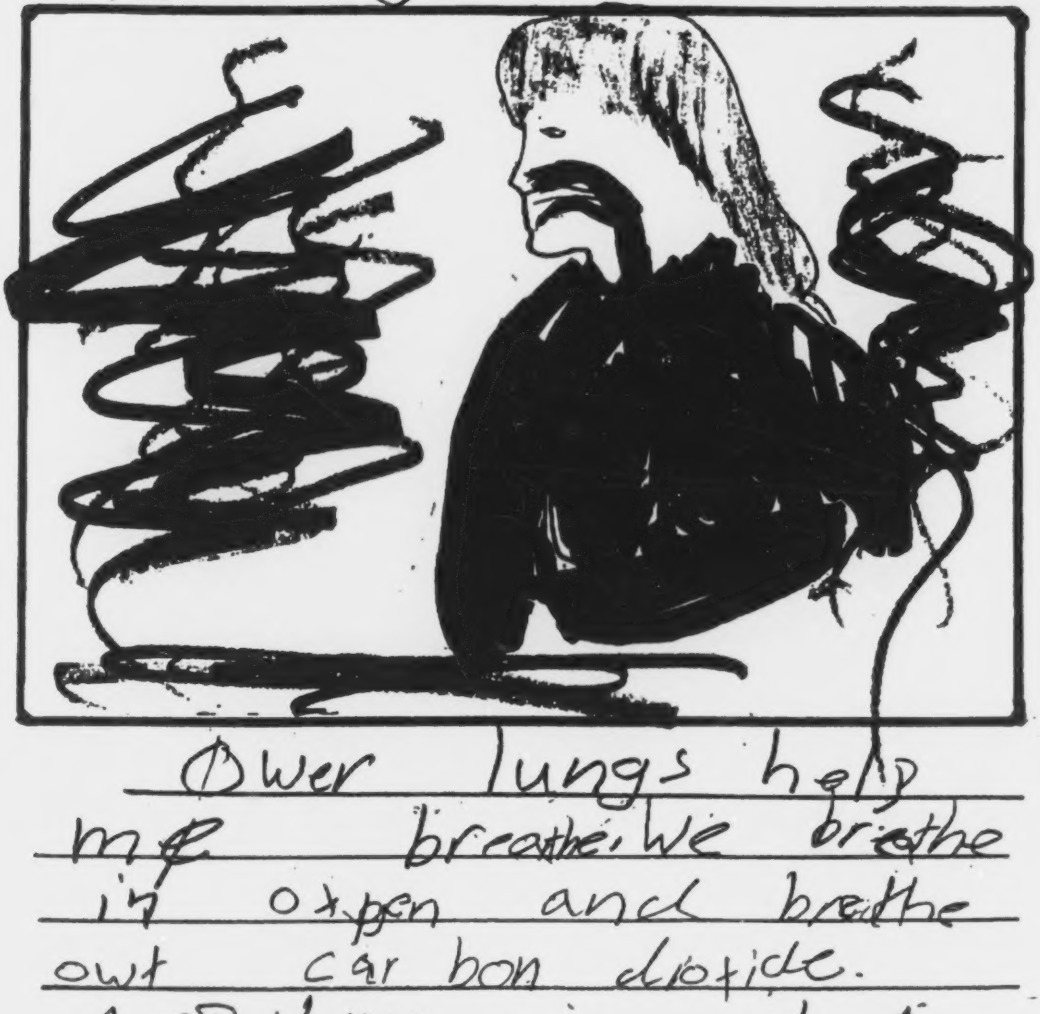
5 Ask students to consider explanations for very low scores or many "yes" responses. For example, they may want to state that they had a cold or had been sick earlier in the week. They also could state that significant physical or emotional strain had occurred during the week of testing, or that they were exposed to known allergies. If students believe that they used the peak flow meter improperly, they should state this as an explanation. If building renovations or other environmental exposures occurred, this should be part of the explanation, too.

6 Give students an opportunity to summarize their findings.

Enhancement Activities

- Help students apply the data analysis skills they used in the asthma unit to "real world" experiences. Ask them to clip newspaper or magazine articles that contain examples of data analysis and bring them to class. Have students discuss the data in terms of what was analyzed and for what purpose. Ask them to identify the data analysis methods.
- Point out to students how the data analysis process is part of the scientific method. Ask them to review the asthma teaching unit and discuss the hypothesis, variables, measurement procedures, results, and conclusions.

Title Lungs



Ower lungs help
me breathe. We breathe
in oxpen and breathe
owt car bon dioxide.
Asthma is when
mucus fills the
bronchiole tubes. my friend
has it. She takes care of it.

Math Lesson #5

Compiling and Analyzing Group Data

To protect confidentiality, the teacher assigns a code name to each student so that the class can examine group data and identify the factors that affect peak flow meter readings.

Grade level: **3-6**

Length: .... **45-60 minutes**

Objectives

The students will:

- learn the importance of collecting data accurately;
- experience a practical use for measurement tools; and
- develop critical thinking and observational skills.

Materials

- A centimeter measuring device
- A record of confidential code names, to be assigned to students by the teacher, for the teacher's use only
- Graph paper or other lined paper that is wide enough to list all students' code names horizontally, or worksheet #15, "Peak Flow Meter Readings: Comparing Gender," and/or worksheet #16, "Peak Flow Meter Readings: Comparing Age," and/or worksheet #17, "Peak Flow Meter Readings: Comparing Height"
- Chalkboard or large chart paper
- Calculators, pencils, rulers
- FYI section of this guide (see page 11)
- The teacher also will need each student's completed worksheet #1, "Daily Breath Measurement Record"

> I had my students create graphs from scratch. Although creating graphs to measure our group data was more involved than using prepared worksheets, this activity enhanced students' learning and was well worth the time.
>
> — 6th grade teacher

Procedure:

1 Collect completed worksheet #1, "Daily Breath Measurement Record," from each student. Assign a confidential code name to each student. To protect confidentiality, do not tell the students their individual code names or reveal them to the class during this unit. Next to each code name, indicate whether the student is a boy or a girl, the student's average peak flow meter reading, and his or her birthdate.

2 Measure each student's height. Record their height in centimeters rather than feet or inches, and do not tell students their number to protect confidentiality when analyzing group data. Discuss with students why it will improve accuracy if one person measures all students, rather than having several people measure different students. Explain that when more than one person takes measurements, they may have different styles or methods that can

affect the consistency and accuracy of the measurements. Invite the school nurse or a parent volunteer to measure students' heights (or take the measurements yourself) using the same device.

3 Record each student's height in centimeters next to his or her confidential code name.

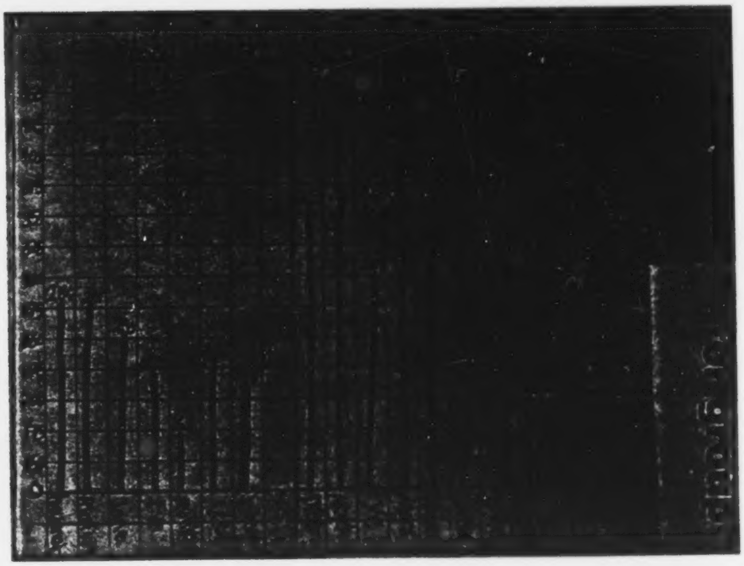
4 Identify a symbol to indicate boys and another symbol to indicate girls. Fill in the code names on two copies of worksheet #15, "Peak Flow Meter Readings: Comparing Gender," in advance. Use one worksheet for boys and another for girls, differentiating them with your symbol. Do not tell students the meaning of the symbol yet. On one copy of the worksheet, order the code names for boys from the lowest average reading to the highest average reading. Do the same on the worksheet for girls. Do not plot the actual numbers at this time. Make a copy of these worksheets for each student, or copy on to an overhead transparency.

5 Tell students the peak flow meter average for each code name. Have them color in the corresponding bar. This also can be done as a class on the overhead transparency, inviting each student to color in a bar. When you have finished, ask students to compare the two charts. (Boys usually have higher peak flow meter readings than girls, and the differences should be very visual). Discuss reasons for the differences. Ask students to calculate average readings for boys and girls.

Enhancement Activities

- Rather than using the pre-printed worksheets, have students make group graphs at the chalkboard or on chart paper. Tell them what each graph will compare (for example, the average peak flow meter readings of boys and girls). Ask the students to identify what the title of each graph would be, and how to set up the graph to record code names and averages.
- Ask students to suggest other ways to analyze this type of data. For example, if they had peak flow meter averages for a group of adults to analyze, they could look at the differences between smokers and non-smokers, or athletes and sedentary people.

6 Fill in code names to worksheet #16, “Peak Flow Meter Readings: Comparing Age,” in advance. Record them in order from youngest to oldest, but don’t plot numbers. Again, make a copy of the worksheet for each student, or copy on to an overhead transparency. Tell students the peak flow meter average for each code name, and have them color in the corresponding bar. When you have finished, explain that the numbers appear from youngest to oldest. Discuss the impact that age has on peak flow meter readings (generally, peak flow meter readings increase with age).



7 Follow the same procedure for worksheet #17, “Peak Flow Meter Readings: Comparing Height,” recording the code names in order from shortest to tallest. Have students color in the bars as you provide the averages. Tell students that the numbers appear in order according to height. Discuss the impact that height has on peak flow meter readings (generally, peak flow meter readings increase with height).

8 Analyze the data you have collected and displayed, either as you finish each graph or after all of the graphs have been completed. Have students think about all of the possible reasons for the differences they observe, in essence creating a hypothesis.

Language Arts Lesson #1

Feelings and How to Express Yourself

Kids who feel okay about having asthma are more likely to succeed at managing it. In this lesson, students explore a wide range of emotions, and the benefits of describing a feeling in specific terms.

Grade level: **1-6**
Length: .... **45-60 minutes**

Objectives

The students will:

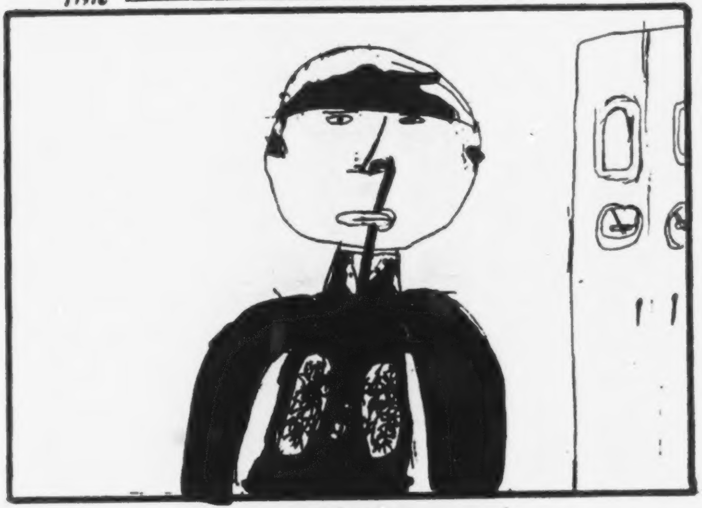
- understand the concept of "otherness" and self;
- learn why it is important to identify their feelings;
- be able to recognize and express their feelings; and
- understand how feeling embarrassed can stand in the way of good asthma management.

Feelings and How to Express Yourself

Materials

- Magazine clippings that show people with different expressions
- Worksheet #18, "How Am I Feeling?"
- Worksheet #19, "Asthma Scenarios"
- FYI section of this guide (see page 11)

Title lungs Samo.



tao lungs help yoo brethe

If you had no hart you cood not live.

If you had no lungs you coodn't brethe

Procedure:

1 Show students the magazine clippings of people with different expressions. Holding up each one, ask ... "What feelings come to mind when you look at this picture?"

2 While continuing to show the pictures, brainstorm a list of different types of feelings and emotions. Ask students to describe them as specifically as possible. Write their responses on the board.

3 Pass out worksheet #18, "How Am I Feeling?" Point out the different categories: happy, compassionate, proud, unhappy, fearful, and embarrassed.

4 Break the students into groups of four or five. Ask each group to brainstorm different "feeling" words for each category. Have students also refer to the words they brainstormed earlier and plug them into the categories.

5 Ask each group to share their ideas. Add the ideas to worksheet #18, "How Am I Feeling?"

6 Discuss how it feels to be embarrassed. Share a "funny" situation in which you felt embarrassed and ask students to share embarrassing situations, too. Point out that we may have felt embarrassed when we did something "different" than other people. Explain that there are some things we can't change about ourselves that may be different from other people, such as our size, skin color, athletic ability, wearing glasses, or having asthma. Ask … "How can we overcome feeling embarrassed for things that we can't change about ourselves? Is there another way we can feel besides embarrassed?"

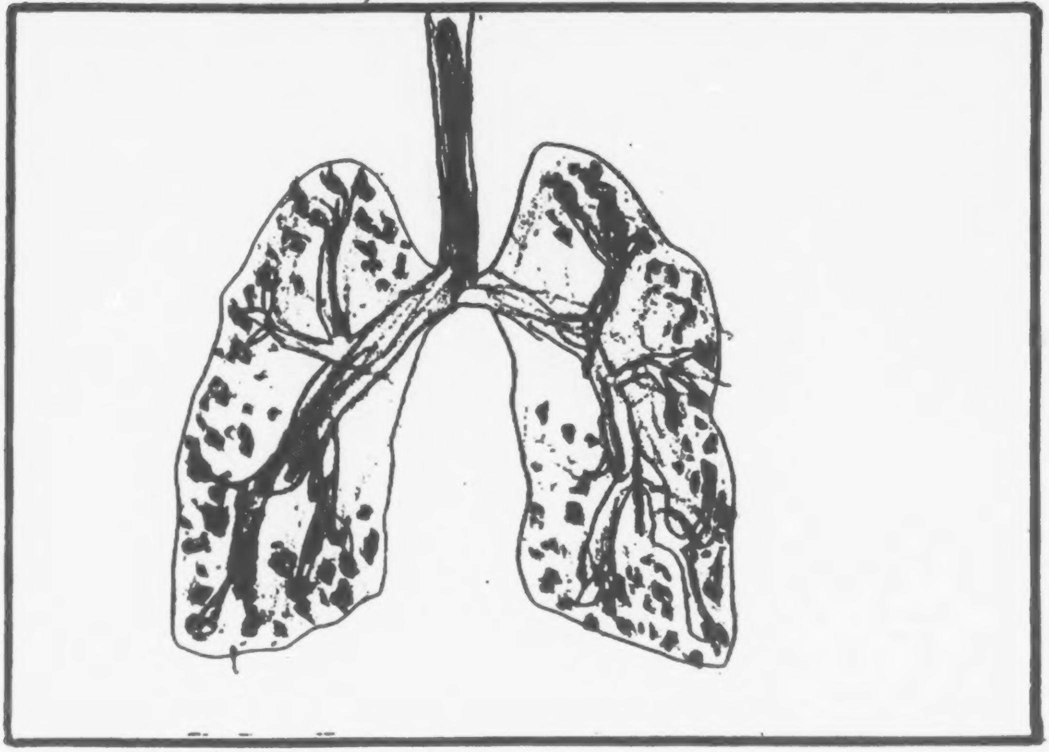
7 Explain that sometimes kids who have asthma feel embarrassed about taking their medication or avoiding their triggers. Point out that feeling embarrassed can be a real a barrier to good asthma management.

8 Pass out worksheet #19, "Asthma Scenarios." Break students into their small groups. Give each group a different scenario. Ask them to discuss how the student with asthma would feel in each scenario, and what other students could do to help the student feel differently. Ask students to focus on the positive feelings: happy, compassionate, proud. Discuss how the way we feel about asthma can affect how someone who has the disease feels about it, too.

Enhancement Activities

- Have students write a description from the point of view of the child with asthma from the scenario discussion.
- Have students write a list of things they can do to help other students feel more comfortable.
- Have the students write their own scenarios and role play them for others.
- Give students magazines to look through. Have them cut out pictures of people showing different expressions and create a "mood" collage.

Title Breathing



When you breathe your breathing with your Lungs. If you smoke you can die or you can get Lung canser and lose Little hairs that will make it so that you can get black lung.

Language Arts Lesson #2

Asthma Vocabulary and Spelling

Students learn new vocabulary words to develop a better understanding of asthma and how it affects breathing. Children with asthma learn key words they can use to enhance communication with their health care providers.

Grade level: **4-6**

Length: .... **20-30 minutes for five days**

Objectives

The students will:

- learn to spell new words;
- define the words and use them effectively in everyday conversations; and
- reinforce their multiplication and addition facts.

Asthma Vocabulary and Spelling

Materials

- Asthma spelling words
- Worksheet #20, "Spelling Math"
- Worksheet #21, "Asthma Word Find"
- FYI section of this guide (see page 11)

Procedure:

1 **On Monday:** Give students a spelling test using words about asthma. Choose appropriate words depending on the skill level of your students.

2 **On Tuesday:** Give each student a notecard with one spelling word written on it, and a dictionary to share. Place a large piece of paper on the chalkboard. Ask the students to look up their spelling words in the dictionary and write the definitions on their notecards. Check the meaning of their words. Then, have students come up individually to place their notecards on the large piece of paper in the front of the room.

Suggested Asthma Spelling Words

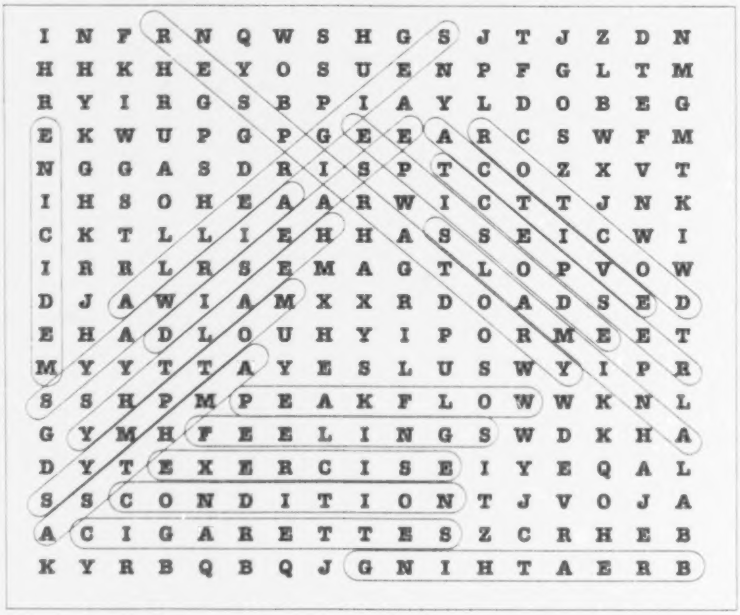
active
airways
allergies
animals
asthma
breathing
cigarette
cold
control
condition
disease
doctor
episode
exercise
feelings
healthy
lungs
medicine
peak flow
respect
respiratory
symptom
triggers

3 **On Wednesday:** Have students write sentences using their spelling words. Remind them to refer to the dictionary definitions for help.

4 **On Thursday:** Pass out worksheet #20, "Spelling Math," for students to complete. Review consonants, vowels, and syllables before they begin.

5 **On Friday:** Pass out worksheet #21, "Asthma Word Find," for students to complete and rewrite their spelling words.

Answers to Worksheet #21: Asthma Word Find



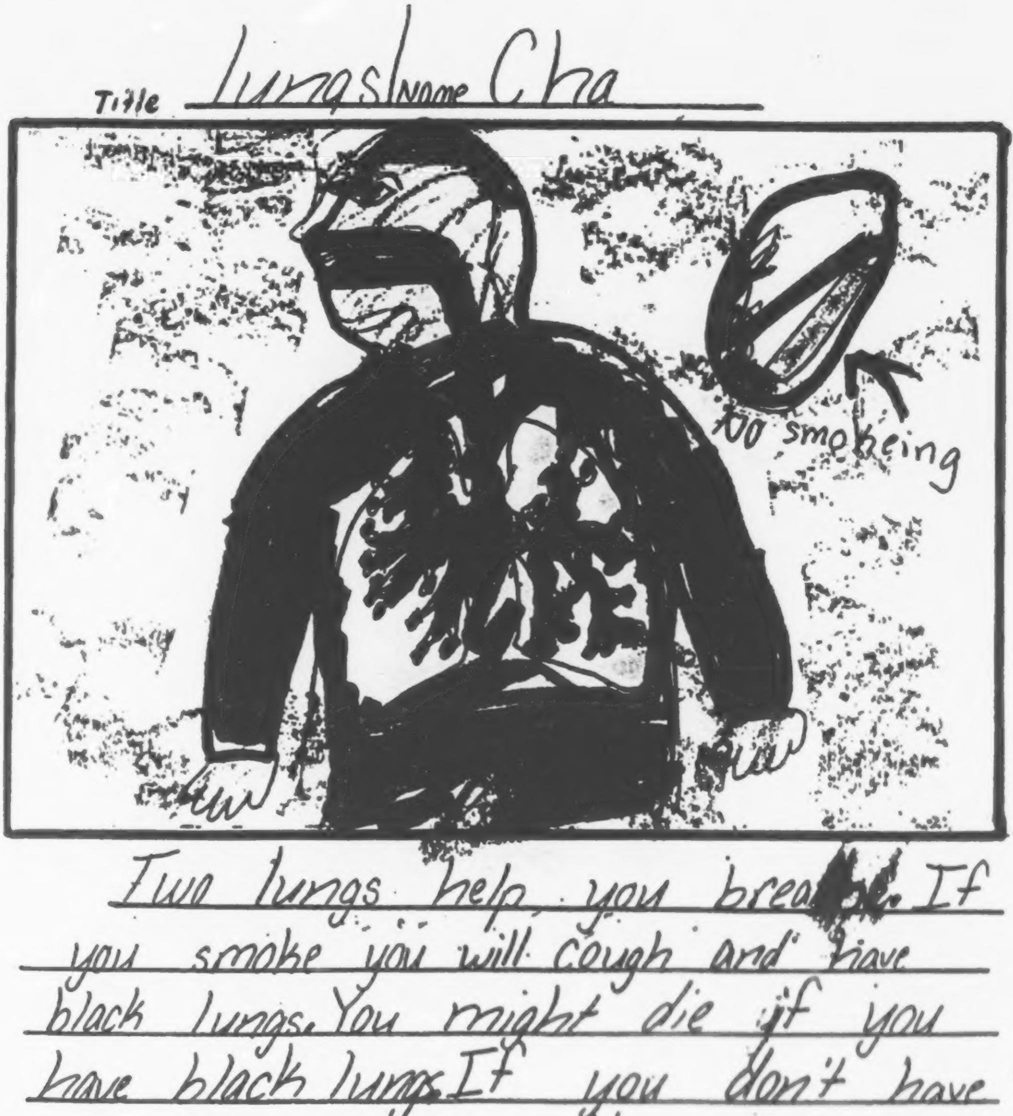
I N F R N Q W S H G S J T J Z D N
H H K H E Y O S U E N P F G L T M
R Y I R G S B P I A Y L D O B E G
E K W U P G P G E E A R C S W F M
N G G A S D R I S P T C O Z X V T
I H S O H E A A R W I C T T J N K
C K T L L I E H H A S S E I C W I
I R R L R S E M A G T L O P V O W
D J A W I A M X X R D O A D S E D
E H A D L O U H Y I P O R M E E T
M Y Y T T A Y E S L U S W Y I P R
S S H P M P E A K F L O W W K N L
G Y M H F E E L I N G S W D K H A
D Y T E X E R C I S E I Y E Q A L
S S C O N D I T I O N T J V O J A
A C I G A R E T T E S Z C R H E B
K Y R B Q B Q J G N I H T A E R B

> What I liked best about the asthma curriculum was the ease with which I could work it into the activities I do with my class every week — like spelling.
>
> — 3rd grade teacher

Enhancement Activities

- Have students write a short story that uses at least 10 of their spelling words.
- Have students discuss, and/or write down, more asthma vocabulary words as you come across them.
- Have students make up their own crossword puzzles using their sentences and definitions.

Title Lungs Name Cha



Two lungs help you breathe. If you smoke you will cough and have black lungs. You might die if you have black lungs. If you don't have any lungs to breathe you would die. You need lungs to breathe so you won't die. Smoke doesn't help you it will kill you.

Language Arts Lesson #3

Friends Helping Friends

In this lesson, students create a one-act play showing steps to take when a peer with asthma needs their assistance.

Grade level: **4-6**

Length: .... **four 45 minute class periods**

Objectives

The students will:

- understand the concept of individual differences;
- feel part of a classroom community that supports all students;
- learn steps to assist a peer having difficulty with asthma; and
- create a one-act play to present to other students as a learning tool.

Materials

- Chart paper
- Markers
- Writing paper
- Worksheet #19, "Asthma Scenarios"
- Worksheet #22, "Friends Helping Friends"
- Materials for props
- Copies of the booklet, "Asthma and You," (optional, see Resources on page 97)
- "The Write Source 2000," by Patrick Sebranek, Verne Meyer and Dave Kemper, Write Source Educational Publishing House, 1990 (optional)
- FYI section of this guide (see page 11)

> "My students had the best time writing and acting in their own plays. The plays turned out so well that they were invited to visit the other classrooms in our school and perform them." — 4th grade teacher

Procedure:

1 As a group, review the information students have previously learned about asthma. (You may want to write this information on chart paper to display while students are working on their plays.)

2 Discuss the different types of symptoms someone with asthma may experience. (A good resource for this information is the booklet, "Asthma and You." Most of the booklet is appropriate for the intermediate grade level, and contains easy-to-understand illustrations.)

3 Break students into small groups of four to five. Ask each group to identify a situation in which a student with asthma may require help from a peer. (These situations may include breathing difficulties while playing sports or during playground games, or an unanticipated exposure to an asthma trigger while on a sleepover or camping trip.) Have each group create a

scenario based on their daily activities. For example, one group might identify a situation in which a child begins to feel her chest tightening up while playing basketball at the park, and she has left her inhaler at home.

4 Have each group share their scenario with the class. Discuss the actions that would be appropriate to the situation. Review the ideas as a large group, allowing for input from all class members.

5 Use the small groups as the playwright groups. Point out the structure you would like students to use. Discuss the need for a clear beginning, middle, and end. A good source for this information is "The Write Source 2000." Explain that students' finished products do not have to be long, but should include an acceptable scripting format that they can use when writing plays in the future. If students are not familiar with scripts, pass out some examples.

6 Distribute worksheet #19, "Asthma Scenarios," and worksheet #22, "Friends Helping Friends," to each playwright group. Explain that each group's job is to produce a play to teach other students.

Enhancement Activities

- Discuss how the student with asthma might feel in each situation. Explore what students can do, as friends, to ease any negative feelings (for example, feeling embarrassed). Remind students that having asthma is a lot like wearing glasses. One student may need to wear glasses to see better; another student may need an inhaler to breathe better.
- Have students complete a paragraph that begins with the opening sentence, "My good friend just found out she/he has asthma."
- Give students additional reading materials to spark their creativity in play-writing. Some good books aimed at kids include "Hometown Hero," by Barbara Aiello; "Thin Air," by David Getz; Jackie Joyner Kersee, "Superwoman," by Margaret Goldstein; and "The Babsitter's Club #90, Welcome to the BSC, Abby", by Ann M. Martin. Note: While the books "Hometown Hero" and "Thin Air" are no longer in print, they can be found in many public libraries.

7 Remind students that they will be working from real-life situations that they could encounter with a friend who has asthma. Tell them that the play should show the situation and demonstrate what action the person with asthma and the friend should take. Tell them that they should use realistic actions to show the class the best way to respond to the situation. Encourage students to be creative.

8 Provide students with ample time to write and edit their scripts, arrange or create props, and to practice their plays. Provide limits, however, to help students manage their time. Check each group's work periodically to make sure that they are on track, and that the script they are writing is accurate and appropriate.

9 Have each group perform their play. Correct any inaccuracies, and provide positive feedback on what they did well. After each group performs, ask ... "What did you learn from this play?" Write students' responses on chart paper.

Science Lesson #1

Making a "Grape Stem" Lung Model

Teachers can create a simple lung model easily and inexpensively. Appealing to the more kinesthetic learners, students feel, see and hear the lungs in motion.

Grade level: **1-6**

Length: .... **30-60 minutes**

Objectives

The students will:

- observe a kinesthetic model to view the respiratory process;
- identify the trachea, bronchial tubes, and alveoli; and
- understand the exchange of gases that takes place in the lungs.

Making a "Grape Stem" Lung Model

Materials

- Cardboard tube from paper towels or toilet paper (one per model)
- Clear one-gallon size plastic bag
- Two separate grape stems, somewhat dried
- Pink and blue modeling clay
- Paint (red or blue) to paint the cardboard tube
- Rubber band
- Clear tape
- Scissors
- Hole punch
- String
- FYI section of this guide (see page 11)

Procedure:

1 Paint the cardboard tube to look like a trachea (optional) before assembling. When the paint is dry, punch a hole on the right and left sides at the lower end of the cardboard tube (you will use these holes to attach the grape stems).

2 Tie a string around the thickest end of one grape stem, and tie it to one of the holes at the end of the cardboard tube. Do the same with the other grape stem to represent the bronchial tubes, bronchi, and bronchioles.

3 Combine the pink and blue modeling clay. Both colors should be visible on each ball to represent the exchange of gases that takes place in the alveoli, with pink representing oxygen and blue representing carbon dioxide. Mold the clay into tiny balls to represent the alveoli.

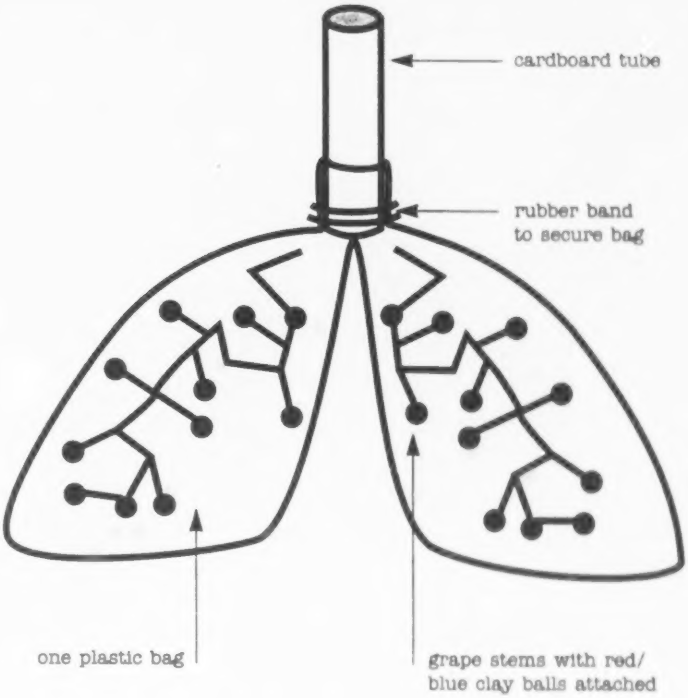
4 Attach the tiny balls to the ends of the grape stems, clustering several balls together at each end point. (The clay balls attach easily to the stems and shouldn't dry, which helps them stay attached.)

This model really grabbed my students' attention because of the breathing sound it made. — 1st grade teacher

5 Open the clear plastic bag and place it over the bottom end of the tube, enclosing the grape stems and clay balls. Wrap a rubber band tightly around the top of the plastic bag and the end of the tube.

6 Cut the bag in half, beginning from the bottom of the bag, moving upward. Stop cutting just before the tube. Make sure the grape stems are in position, with one in each half of the plastic bag. To create two lungs, tape each half of the bag shut where you did the cutting. Check that you have securely taped all holes, especially where the bag meets at the end of the tube.

7 When you introduce the model to students, explain that the tube represents the trachea, the bags represent the lungs, and the grape stems/ clay balls represent the alveoli.


cardboard tube
rubber band to secure bag
one plastic bag
grape stems with red/ blue clay balls attached

Enhancement Activities

- Have students draw a model of the lungs, including the trachea, bronchial tubes, and alveoli.
- Have students write an explanation of the exchange of gases, which occurs in their lungs.

Title Asthma by Jack

My dad use to smoke but he dosn't anymore because he listened to a hipnatising tape and me and my brothers stole his packs. So if someone asks me to smoke I will say, "NO!!!"

8 To demonstrate how the lungs work, blow into the tube. The bags should inflate easily. Then, inhale to withdraw the air from the bags. Continue to inflate and deflate the bags in an easy, steady manner. (For sanitary reasons, only one person should blow into the tube.)

9 To enhance the model, make a pink clay heart the size of a student's fist. Place it between the two lungs. As you blow into the tube, make the clay heart "beat" by moving it gently.

Science Lesson #2

Making a "Bottle and Balloon" Lung Model

This lesson provides another easy and inexpensive model teachers can make to visually represent the lungs and highlight the role of the diaphragm. Students can make a mini-model to take home using similar materials.

Grade level: 1-6

Length: .... 30-60 minutes

Objectives

The students will:

- observe a kinesthetic model to see how the respiratory process works; and
- understand the function of the diaphragm in breathing.

Making a "Bottle and Balloon" Lung Model

Materials

- A one or two liter clear, plastic bottle
- Sharp scissors or knife to cut off bottom of plastic bottle
- Rubber bands
- One 9 to 12" balloon
- One standard 12" drinking straw
- One rubber glove
- Tape to attach rubber glove
- Modeling clay
- FYI section of this guide (see page 11)

Procedure:

1 Before presenting this model to the class, have students review the parts of the body involved in respiration, including the nasal and oral cavities, trachea, bronchial tubes, lungs, and the diaphragm. Explain the vital role the diaphragm plays in the breathing process. (When the diaphragm contracts, it allows space in the lungs to fill with air. When it relaxes, it helps to push the air out of the lungs. Several other muscles located around the torso also help, but the diaphragm is the largest muscle in the team of muscles that aid in the breathing process.)

2 To begin making the model, cut off the bottom of the plastic bottle as straight as possible. Avoid sharp edges that may cut holes when you attach the rubber glove.

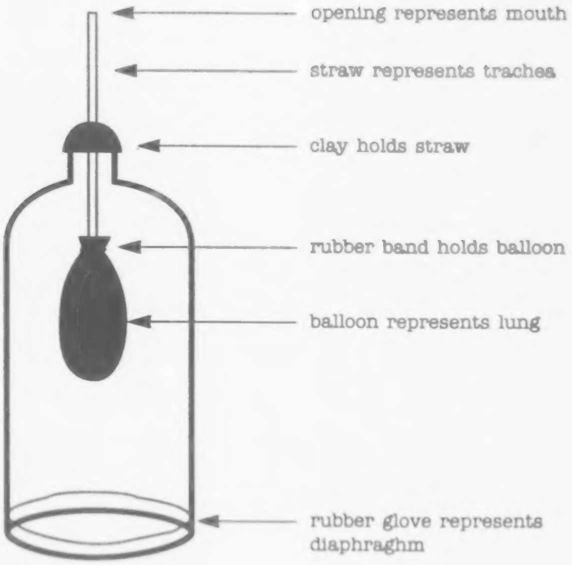
3 Connect the balloon to one end of the straw with a rubber band. Attach the balloon as snugly as possible, with the mouth of the balloon over the end of the straw. Insert the balloon with the attached straw into the bottle.

4 Cut a piece of modeling clay to cover the mouth of the bottle. Use a thick enough slab so that you'll be able to insert the straw through the clay without creating any holes. Remember that the model should be as air-tight as possible.

5 Use a pencil to create a hole through the clay and insert the straw. Push the clay snugly around the straw so that the straw is halfway in and halfway out of the bottle. Keep the balloon about three inches from the base of the bottle, suspended and not touching the sides of the bottle.

6 Cut the rubber glove to fit the bottom of the bottle. Stretch it around the base of the bottle, and tape the edges of the glove outside the bottle. Put a rubber band over the tape to achieve an air-tight seal.

7 To work the model, simply pinch the rubber glove at the bottom of the bottle and pull it down. As you do this, the balloon should inflate or "breathe." When you loosen up on the glove, it should deflate. There will still be some air in the balloon, however. To get it to "exhale" further, push the rubber glove up toward the balloon to release more air.



Enhancement Activities

- Have students make a smaller model, using small plastic bottles and the same types of materials.
- Have students write an explanation of the respiratory process.
- Invite a physician or other health care professional to perform a dissection of a pig heart and lungs for the class. (Some meat markets have direct access to stockyards and will provide a set of pig lungs free of charge.) When you contact them, ask that the pig's trachea, heart, lungs, esophagus, and attached epiglottis be intact. Keep in mind that some students will not be able to participate in the dissecting activity, either because they cannot tolerate the idea or because it may be against their religion to touch any part of a pig.

Jocep

Title Asthma

I have 2 lungs.

85

Science Lesson #3

Making a "Two Balloon Lung" Take-Home Model

Each student can make this fun, easy, and inexpensive take-home model to reinforce the asthma curriculum with their families.

Grade level: **4-6**
Length: .... **45-60 minutes**

Objectives

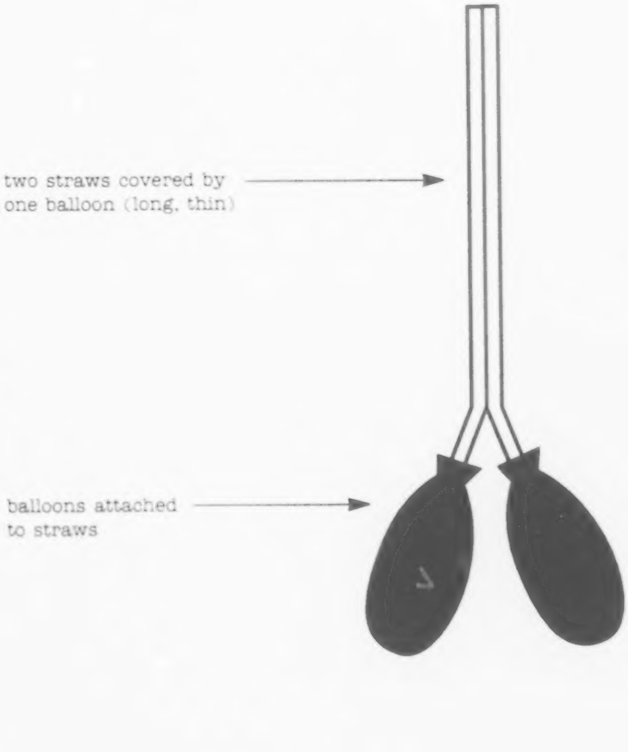
The students will:

- assemble a model of the lungs;
- observe the breathing process; and
- understand how the lungs inflate and deflate.

Making a “Two Balloon Lung” Take-Home Model

Materials

- Two straws with flexible ends
- Two pink, 9 to 12” balloons
- One or two long, thin balloons (used to cover the two straws so that they become one trachea)
- Tape
- Rubber bands
- Marker pens (to draw on the balloons)
- FYI section of this guide (see page 11)


two straws covered by one balloon (long, thin)
balloons attached to straws

Procedure:

1 Have students tape the two straws together, except for the flexible ends. Move the flexible ends so that one bends right and the other bends left to represent the two bronchial tubes.

2 Have students attach a balloon to the flexible end of each straw with a rubber band. Encourage students to check each junction so that it is airtight and secure.

3 With markers, have students draw the bronchiole tubes and alveoli onto the front and back sides of each balloon (before it is blown up).

4 To represent the trachea, have students cut off the end of a long thin balloon and put it over the two straws taped together. Students may want to use a second long thin balloon to enclose the two joined straws, if necessary.

5 Have students blow into the "trachea" and watch the two balloons inflate simultaneously. Ask .... "What happens to the lungs when we breathe in? When we breathe out?"

6 Have students make a fist, and place it on their chest between the two balloons. Breathing slowly into the balloons, have them show their beating "heart" by moving their fist up and down, rhythmically.

> My students received a strong sense of accomplishment from the asthma curriculum, especially when they could take home something tangible. This model helped students gain a better understanding of the inner workings of their lungs and how they function. — 5th grade teacher

Enhancement Activities

- Have students pinch the portion of the straw that connects the trachea to the lungs. Discuss how asthma affects the breathing process.
- Have students write an explanation of how asthma affects the breathing process.
- Using a large roll of paper, have students pair up and trace their bodies and cut out their silhouettes. Instruct them to color the heads to look like themselves. Then, have them draw in the various body parts, including the inner workings of the lungs. (A good resource for this project is "My Body," by Patricia Carratello, as described on page 97 of the Resources.)

Title Asthma By Samuel

My mom, [illegible] Bat smoker. Sheg got a haret attack. [illegible] diyed. I was kindof Sad. My Dad was really Sad. I grew little tears.

Science Lesson #4

Making a "Lung People" Model

Inexpensive and easy to make, this model gives students a realistic picture of the breathing process. It also can help students see that, although we have different kinds of facial features and skin colors, we all have the same kind of respiratory systems.

Grade level: **4-6**

Length: .... **30-60 minutes**

Objectives

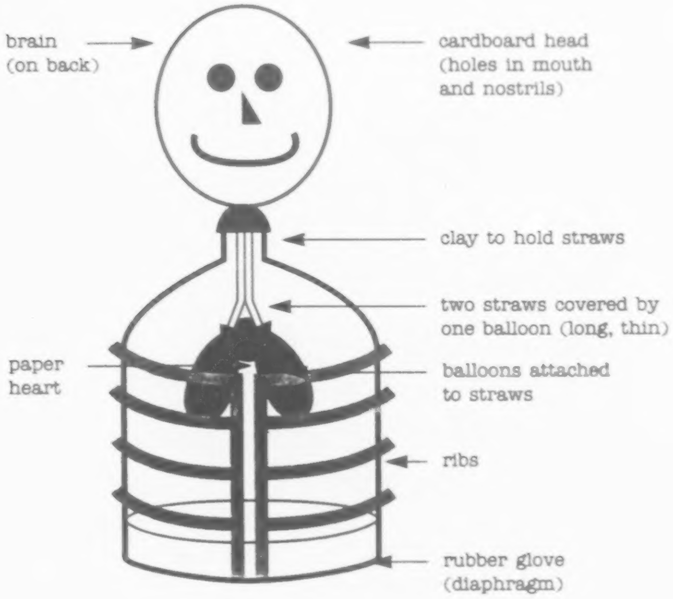
The students will:

- identify the nasal and oral cavities, trachea, lungs, bronchial tubes, bronchi, bronchioles, alveoli, diaphragm, heart, brain, and ribs; and
- understand how these body parts all work together for respiration to occur.

Making a "Lung People" Model

Materials

- One gallon clear plastic water bottle
- Modeling clay
- Two straws with flexible ends
- Two pink balloons, 9 to 12" in size
- Two thin, long balloons (long enough to cover the straws)
- Rubber bands
- Rubber glove
- Clear plastic tape
- Cardboard (to create a head)
- Markers, colors or paint (to draw facial features)
- White tape or white poster paint (to create ribs on the bottle)
- Red paper or clay (to create a heart between the two lungs)



Procedure:

1 Tape the two straws together, except for the flexible ends. Move the flexible ends so that one bends right and the other bends left to represent the two bronchial tubes.

2 Attach a balloon to the flexible end of each straw with a rubber band. Check each junction so that it is airtight and secure. Cut off the end of a long, thin balloon and put it over the two straws taped together to represent the trachea.

3 Cut off the bottom of the plastic bottle as straight as possible (avoid sharp edges that may cut holes when you attach the rubber glove). Insert the straws with the attached balloons into the bottle

4 Cut a piece of modeling clay to cover the mouth of the bottle. Use a thick enough slab so that you'll be able to insert the straws through the clay without creating any air leaks.

5 Use a pencil to create a hole through the clay and insert the straws. Push the clay snugly around the straws.

6 With tape, attach a "heart" made of either paper or clay between and slightly behind the two balloons.

7 Cut the rubber glove to fit the bottom of the bottle. Stretch it around the base of the bottle, and tape the edges of the glove outside the bottle. Put a rubber band over the tape to achieve an air-tight seal. Test the model by pulling down on the "diaphragm" to make sure that the lungs inflate.

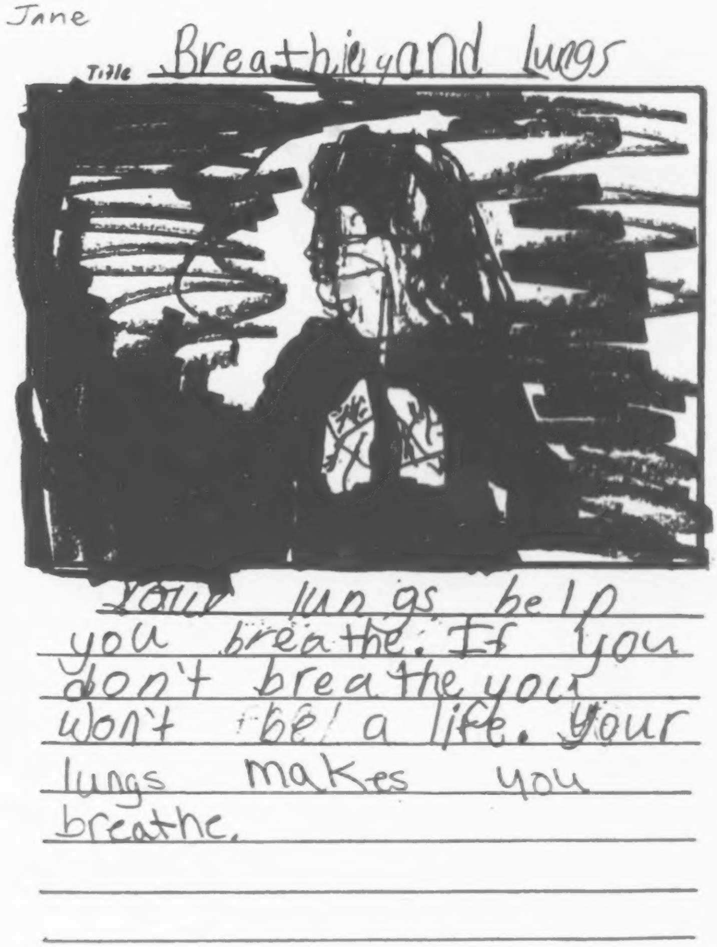
8 Apply white surgical tape, which can easily be removed if a mistake is made, or white poster paint around the entire bottle to represent the ribs.

9 Cut a "head" out of cardboard. Draw the features on your figure and, with a sharp pencil point, make a hole in the mouth and in each

Enhancement Activities

- Have students make their own "lung persons," creating the heads to look like their faces. When the models are complete, ask students to compare the similarities and the differences. Discuss that, although we each have different facial features and skin colors, we all have the same kind of respiratory systems.
- Discuss that asthma affects people of all colors, ages, shapes and sizes.

This activity got us all talking about how people are all the same on the inside.
— 4th grade teacher



Jane

Title Breathingand lungs

Your lungs help you breathe. If you don't breathe you won't be a life. Your lungs makes you breathe.

nostril to show how air enters the body through the nasal and oral cavities.

10 Pull down on the rubber glove to represent the diaphragm inflating the lungs. Push up on the glove to deflate the lungs. Discuss how all of the body parts in the model contribute to respiration.

Camera-Ready Worksheets

This section contains the camera-ready worksheets that complement the lesson plans.

- Worksheet #1, "Daily Breath Measurement Record"
- Worksheet #2, "Asthma IQ"
- Worksheet #3, "What Do I Know About Asthma?"
- Worksheet #4, "Check Your Peak Flow Meter Readings"
- Worksheet #5, "The Breathing Wheel"
- Worksheet #6, "Things That Can Make Your Breathing Difficult"
- Worksheet #7, "Things That Can Make Your Breathing Easier"
- Worksheet #8, "Fraction of Yes and No Responses"
- Worksheet #9, "Peak Flow Meter Readings: Average"
- Worksheet #10, "Peak Flow Meter Readings: Median and Range"
- Worksheet #11, "Peak Flow Meter Readings: Mode"
- Worksheet #12, "Peak Flow Meter Readings: Bar Graph"
- Worksheet #13, "Peak Flow Meter Readings: Line Graph"
- Worksheet #14, "Peak Flow Meter Readings: Pie Chart"
- Worksheet #15, "Peak Flow Meter Readings: Comparing Gender"
- Worksheet #16, "Peak Flow Meter Readings: Comparing Age"
- Worksheet #17, "Peak Flow Meter Readings: Comparing Height"
- Worksheet #18, "How Am I Feeling?"
- Worksheet #19, "Asthma Scenarios"
- Worksheet #20, "Spelling Math"
- Worksheet #21, "Asthma Word Find"
- Worksheet #22, "Friends Helping Friends"

BEST COPY AVAILABLE

Worksheet #1: Daily Breath Measurement Record

Keep this record in a safe place. Fill it in every day.
Mark "Y" for yes if you are having breathing problems.
Mark "N" for no if you are not having breathing problems.

Name/Code ______________ Date ______________

DAY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
1) Cough during the day										
2) Cough during the night										
3) Wheezing during the day										
4) Wheezing during the night										
5) Short of breath with running, sports, exercise										
6) Missed school due to breathing problems										
7) Took extra medicine for breathing problems										
8) Exposed to cigarette smoke										
Peak Flow Meter Readings										

Project ACCORD 1998

Worksheet #2: Asthma IQ

Answer "Yes" or "No" to the questions by putting an X in the "Yes" or "No" box to the right of each question.

Name/Code ____________

Date ____________

	YES	NO
1. **Do you think asthma is an illness that many adults and children have in the United States?**		
2. **Do you think people's thoughts and feelings cause them to have asthma?**		
3. **Do you think asthma is caused by the way parents raise their children?**		
4. **Asthma can cause breathing problems. Do you think these problems can be really harmful or dangerous?**		
5. **Do you think asthma episodes happen quickly without any warning?**		
6. **Do you think there are many different reasons why people get asthma symptoms?**		
7. **Asthma cannot be cured, but do you think it can be controlled?**		
8. **Are there medicines to help control asthma?**		
9. **Are there ways people with asthma can check on how well their lungs are working?**		
10. **Do you think both children and adults can have asthma?**		
11. **Do you think cigarette smoke can make asthma symptoms worse?**		
12. **Do you think children with asthma can play like the rest of their friends?**		

Answers to Worksheet #2: Asthma IQ

1. Asthma is a common disease among children and adults in the United States. The number of children diagnosed with asthma each year is going up. About ten million people have asthma, of whom three million are children.

2. Asthma is not an emotional or psychological disease. Strong feelings can sometimes make asthma worse. People with asthma have sensitive lungs that react to certain things, causing the airways to tighten, swell, and fill with mucus. The person then has trouble breathing and may cough and wheeze.

3. The way parents raise their children does not cause asthma.

4. Asthma episodes can be very harmful. People can get very sick and need to stay in a hospital. Some people have died from asthma episodes. Frequent asthma episodes, even if they are mild, may cause a child not to feel well enough to go to school or play sports.

5. Sometimes an asthma episode may come on quite quickly. Usually there are symptoms such as a cough, a scratchy throat or tightness in the chest before a person has any wheezing or shortness of breath. People can learn to notice these early symptoms and can take medicine to prevent a serious attack.

6. For most people with asthma, an episode can start from many different "triggers." Some of these triggers are pollen from trees or grasses; molds or house dust; weather changes; strong odors; cigarette smoke and certain foods. Other triggers include being upset, laughing or crying hard, having a cold or the flu, having cockroaches in the house, or being near furry or feathered animals. Each person with asthma has his or her own set of asthma triggers.

7. There is no cure for asthma yet. But asthma patients can get some control of their symptoms by:

- learning to notice early signs of an asthma episode and starting treatment
- avoiding things that cause an asthma episode
- taking medicine just the way the doctor says
- getting advice from a doctor who treats children with asthma
- knowing when to get medical help with a severe episode.

8. Several types of medicines are available to control asthma. Some people with mild asthma need to take medicine only when they have symptoms. But many people need to take medicine every day to prevent symptoms as well as medicine when they have symptoms. A doctor needs to decide the best type of medicine for each person and how often it should be taken. People with asthma and their doctors should work together to make a good plan to manage the disease. When this plan is carried out, most people live pretty normal lives.

9. People with asthma can check how well their lungs are working with a peak flow meter. A peak flow meter is a small tool that measure a person's ability to push air out of their lungs. This can be used at home or at school. The peak flow meter may show the asthma is getting worse before the usual symptoms start.

10. Both children and adults can have asthma. Sometimes, but not always, symptoms will go away as children get older. Many children continue to have asthma symptoms when they are adults. Sometimes symptoms of asthma are not recognized until a person is an adult.

11. Smoke from cigarettes, cigars and pipes can bring on an asthma episode. Indoor smoky air from fireplaces and outdoor pollution can make asthma worse. Smokers should be asked not to smoke near someone with asthma. Moving to another room may help, but smoke travels from room to room. No smoking is best for everyone!

12. Exercise is good for most people — with or without asthma. When asthma is under good control, people with asthma are able to play most sports. For people whose asthma is brought on by exercise, medicines can be taken before exercising to help avoid an episode. A number of Olympic medalists have asthma.

Adapted from the National Institutes of Health Heart, Lungs and Blood Institute publication, "Asthma I.Q."

Worksheet #3:
What Do I Know About Asthma?

Fill in the blanks.

Name/Code ________________

Date ________________

1. Asthma affects the ________________ in the lungs, which are part of the ________________ system.

2. Four things that can make asthma worse are ________________ , ________________ , ________________ , and ________________ .

3. When a person is having and asthma episode, I might see signs and symptoms such as ________________ , ________________ , and ________________ .

4. If I think I might have asthma, I can get help from people like ________________ , ________________ , and ________________ .

5. I can help my friend deal with his/her asthma by ________________ or ________________ .

Write in the blank if the statement is True or False.

______ Children with asthma can run and play like their friends who do not have asthma.

______ I can catch asthma from a friend, just like a cold or flu.

______ Furry pets are one of the things which make Kim's asthma worse, but it is OK if she plays with a cat for just a little while.

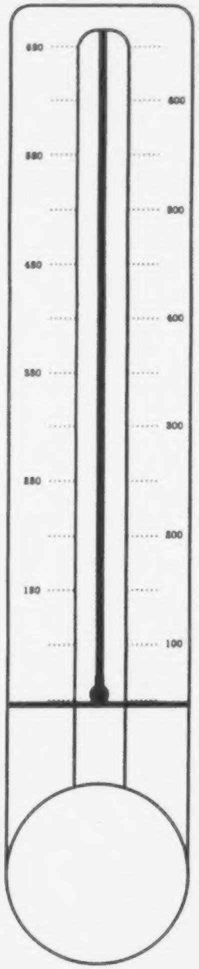
______ My friend with asthma probably doesn't mind if I tease him about using his medicine.

______ Children with asthma have to miss a lot of school.

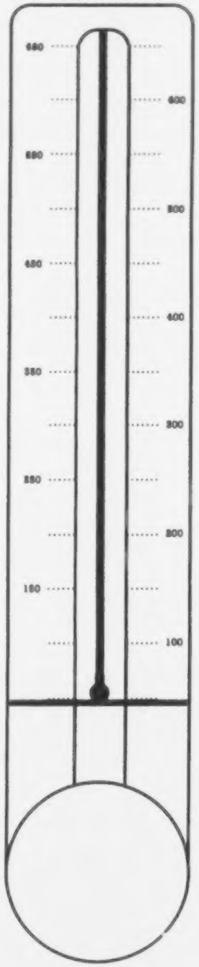
Adapted from the National Institutes of
Health Heart, Lung and Blood Institute

Worksheet #4: Check Your Peak Flow Meter Readings

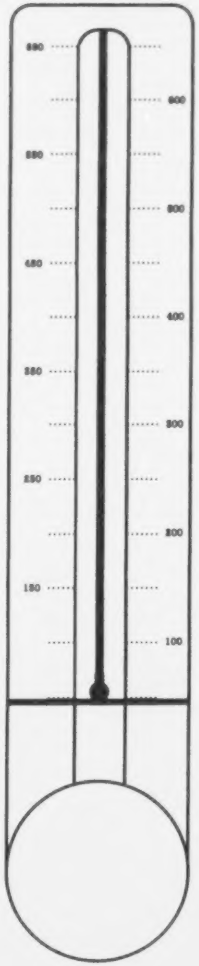
Name/Code ______________ Date ______________



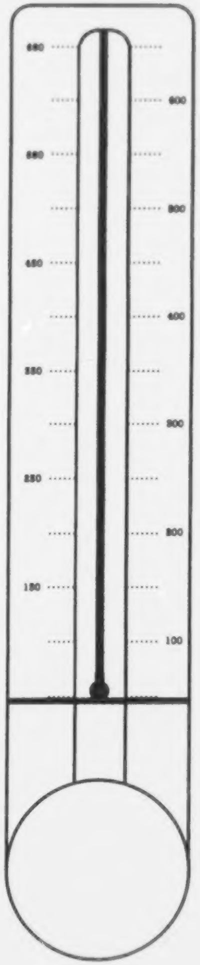
Day _____



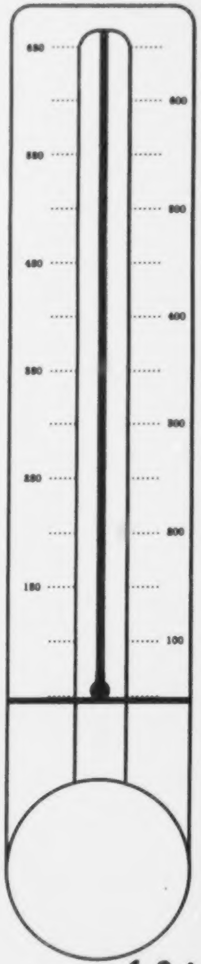
Day _____



Day _____



Day _____



Day _____

Project ACCORD 1998

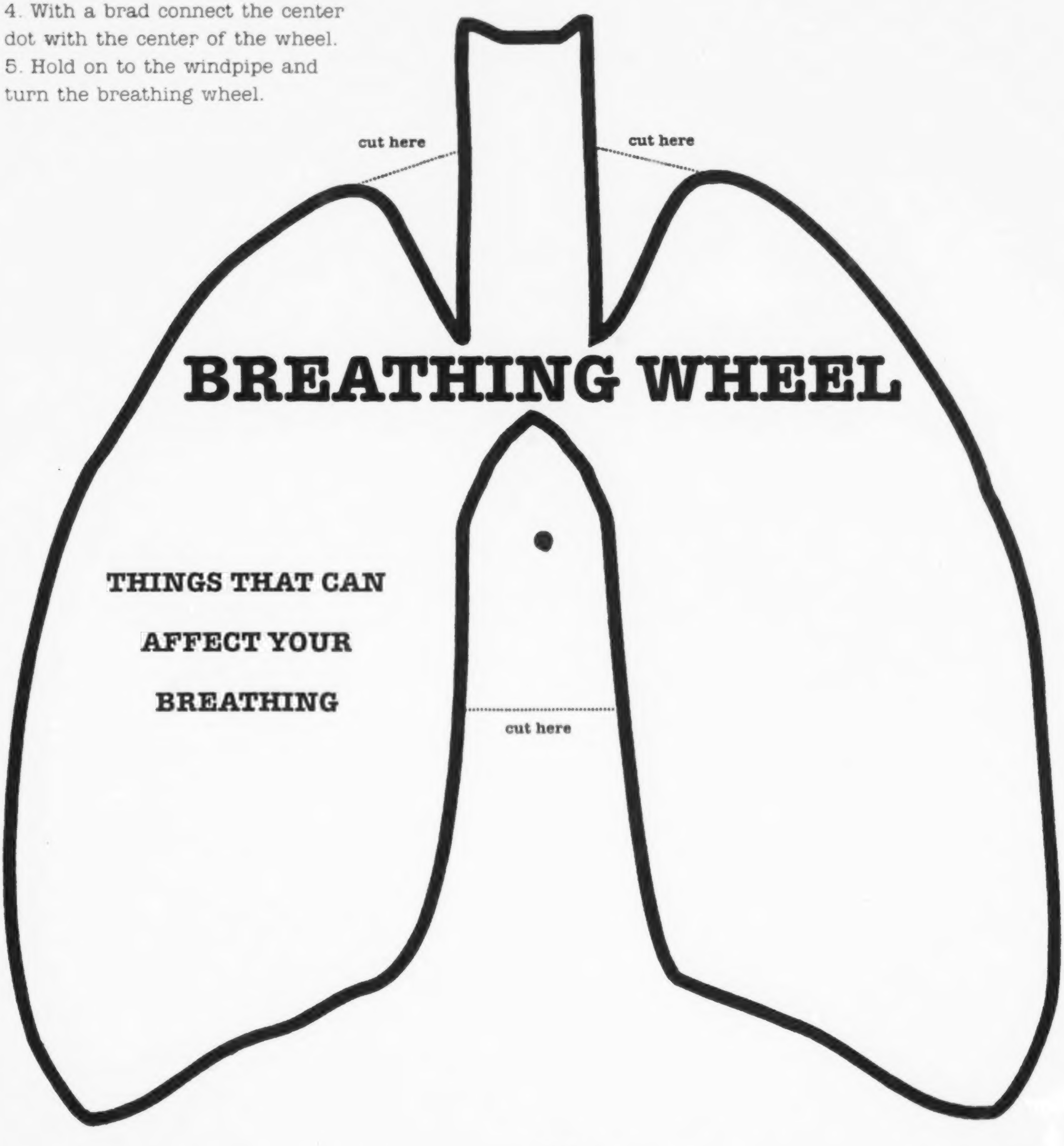
Worksheet #5: The Breathing Wheel

Directions

1. Put your name on the back of the lungs.
2. Cut on the dotted and dark lines.
3. Cut out the breathing wheel circle.
4. With a brad connect the center dot with the center of the wheel.
5. Hold on to the windpipe and turn the breathing wheel.

Name/Code ____________________

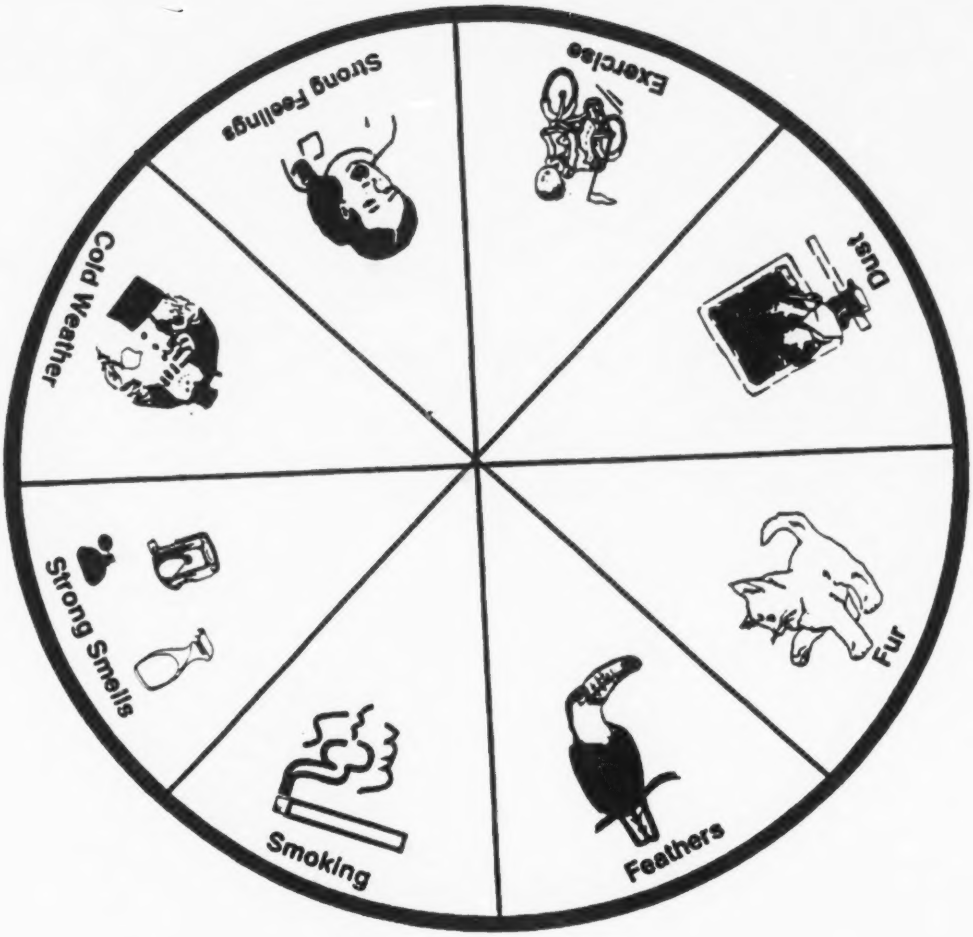
Date ____________________



Worksheet #6: Things That Can Make Your Breathing Difficult

Name/Code ____________

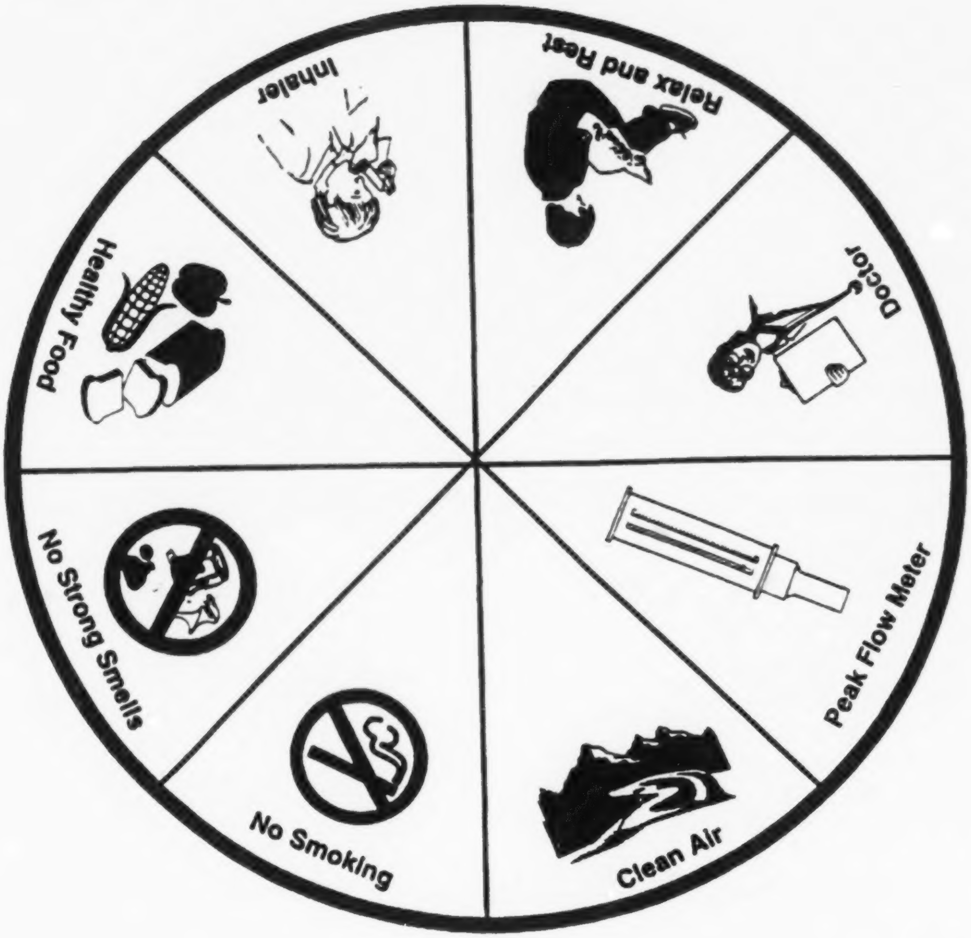
Date ____________



Worksheet #7: Things That Can Make Your Breathing Easier

Name/Code ________________

Date ________________



Worksheet #8: Fractions of Yes and No Responses

Using your Daily Breath Measurement Record, fill in the fraction of the ten day period that you answered with yes or no. This indicates whether you did or did not experience symptoms or breathing problems.

Name/Code ____________

Date ____________

Symptoms	**Fraction Yes**	**Fraction No**
1. Cough during the day.	$\frac{\_\_\_}{10}$	$\frac{\_\_\_}{10}$
2. Cough during the night.	___	___
3. Wheezing during the day.	___	___
4. Wheezing during the night.	___	___
5. Short of breath with running, sports, exercise.	___	___
6. Missed school due to breathing problems.	___	___
7. Took extra medicine for breathing problems.	___	___
8. Exposed to cigarette smoke.	___	___

Worksheet #9:
Peak Flow Meter Readings: Averages

Name/Code ________________

Date ________________

To find the daily peak flow meter average (mean) over a ten day period, follow these steps:

1. Copy the data from the Daily Breath Measurement Record, entering the number for each day. Use the boxes on the side for this.
2. Using a calculator, add the ten numbers. Write the total in the bottom box. Check two times to see if your total is correct.
3. Divide the total by the number of days (entry numbers) to find your average. Use the equation below.

   Total ÷ Number of Days (Entry Numbers) = Average (Mean)

Day 1

Day 2

Day 3

Day 4

Day 5

Day 6

Day 7

Day 8

Day 9

+ **Day 10**

TOTAL

Total ÷ **# of Days** = **AVERAGE (Mean)**

Worksheet #10: Peak Flow Meter Readings: Median and Range

A. Finding the Peak Flow Meter Median Number

Name/Code ____________

Date ____________

1. Write your numbers from lowest to highest in the boxes below.

2. The median is the middle number. To find it, cross off numbers on either end until there is one in the middle. If there are two numbers in the middle, choose one.

3. What is your median (middle number)?

B. Finding the Peak Flow Meter Range

1. In the top box, write in the highest number you reached.

2. In the bottom box, write in the lowest number you reached.

−

3. Using a calculator, subtract to find the difference. This number is the range.

Worksheet #11:
Peak Flow Meter Readings: Mode

Name/Code ____________________
Date ____________________

To find the mode, follow these steps.

1. Use the data from the Daily Breath Measurement Record.
   Write the numbers from the lowest to highest in the boxes below.

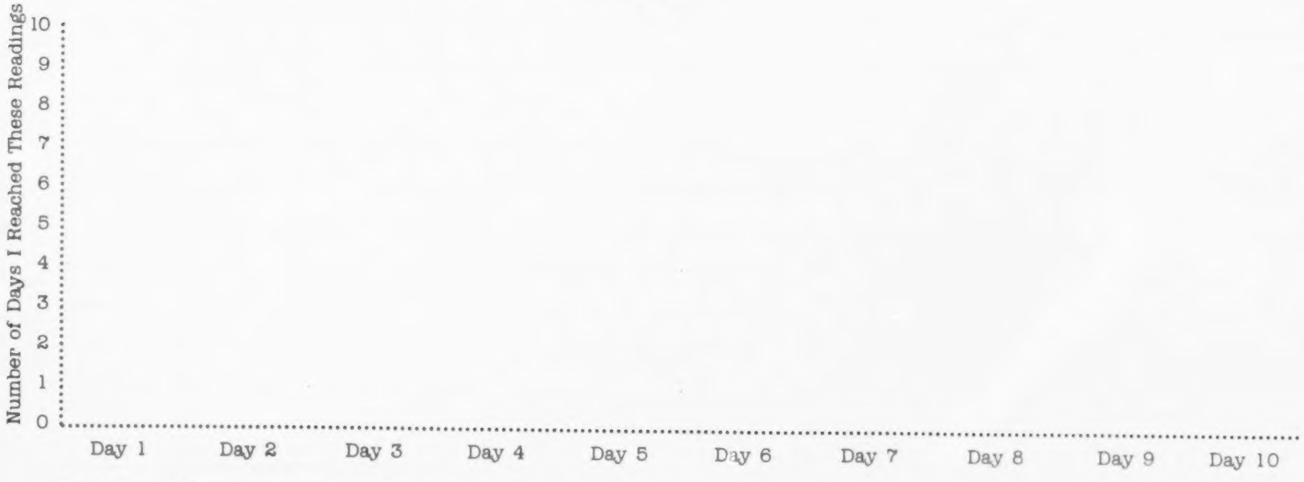
2. The mode in a group of numbers is the number you see the most. To find the mode, draw a circle around the group or groups of numbers that you see the most.

3. What is your mode? (There can be more than one mode.)

4. To see the mode on a bar graph, write each of your numbers just once on the bottom row of boxes.

5. Use a different color for each separate number. Color in a bar (starting at the zero line) up to the amount of days you reach that number.

Seeing the mode on a bar graph

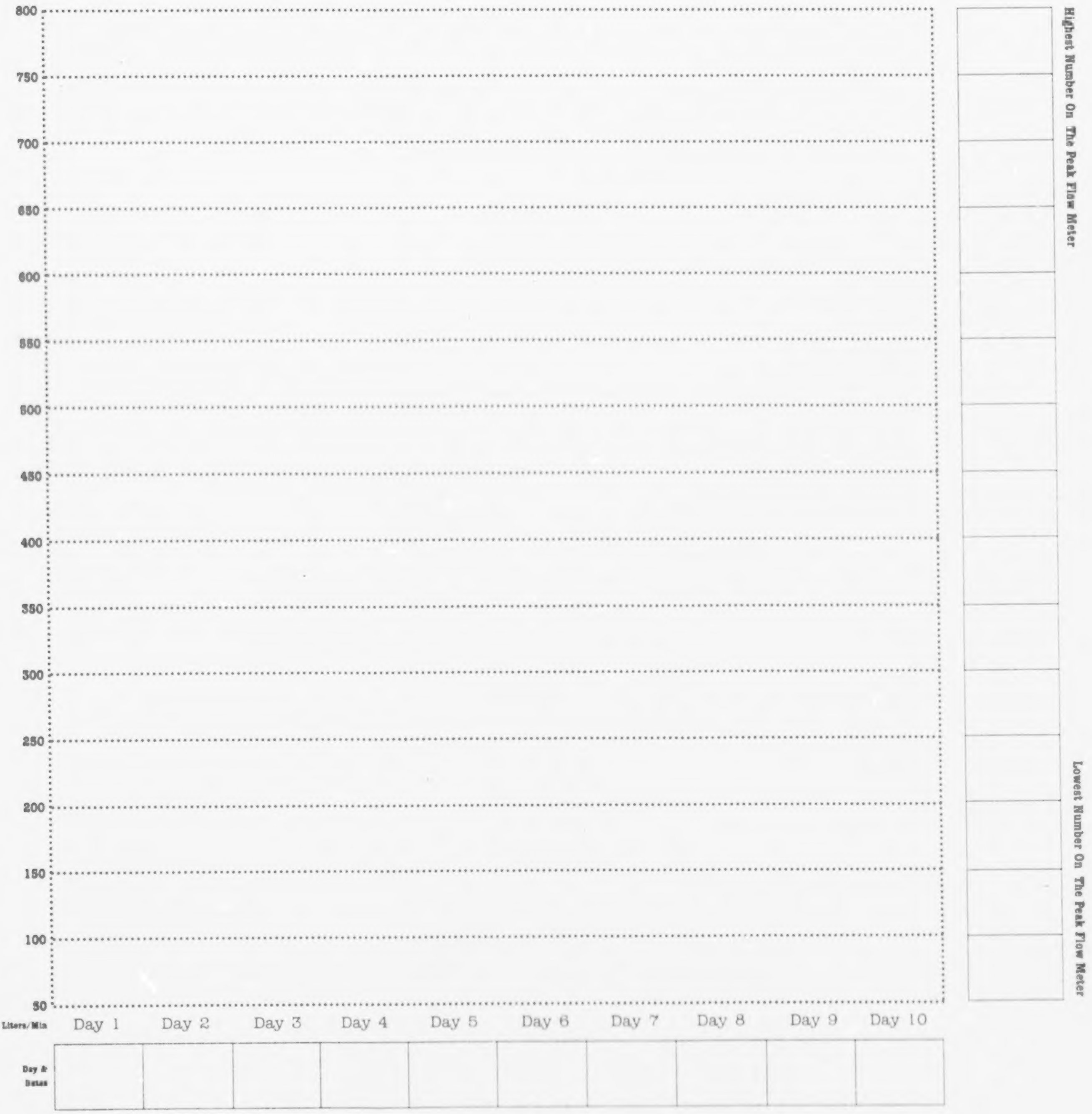


Peak Flow Meter Readings Over Ten Days

Worksheet #12:
Peak Flow Meter Readings: Bar Graph

Name/Code ____________

Date ____________



Worksheet #13:
Peak Flow Meter Readings: Line Graph

Name/Code ____________

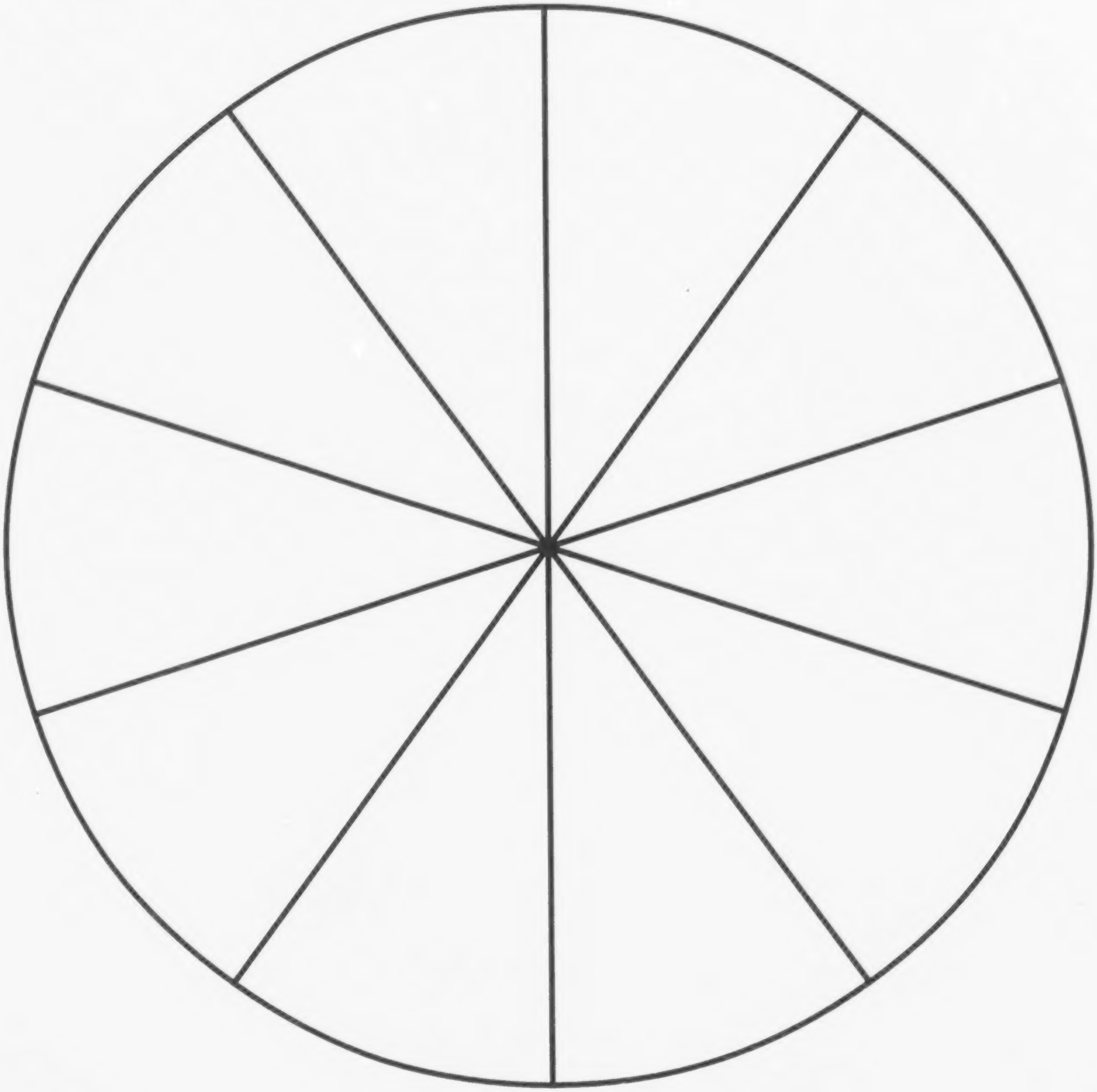
Date ____________

Day & Dates										

Project ACCORD 1998

Worksheet #14:
Peak Flow Meter Readings: Pie Chart

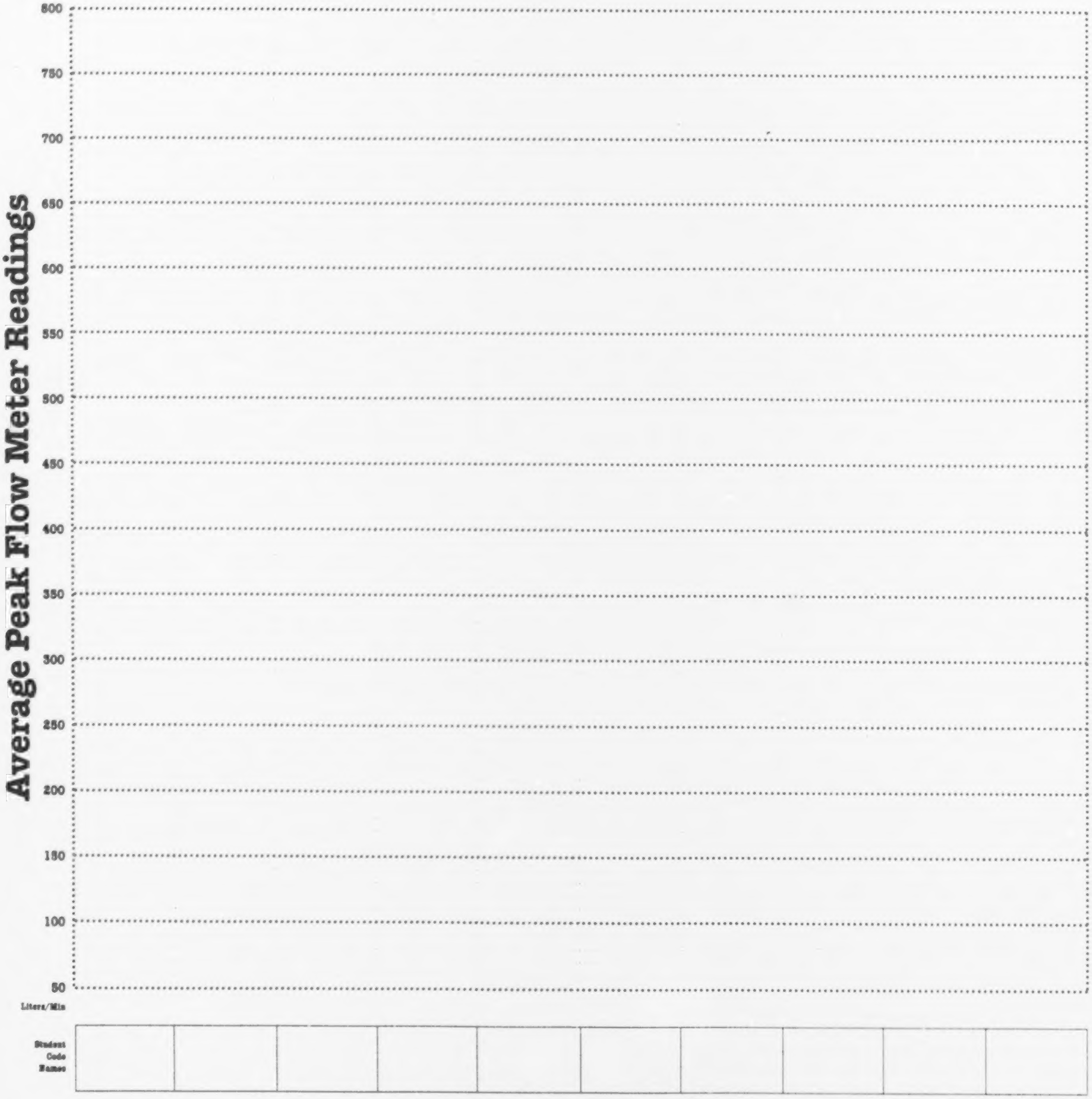
Name/Code ____________________
Date ____________________



Worksheet #15: Peak Flow Meter Readings: Comparing Gender

Name/Code ______________________

Date ______________________

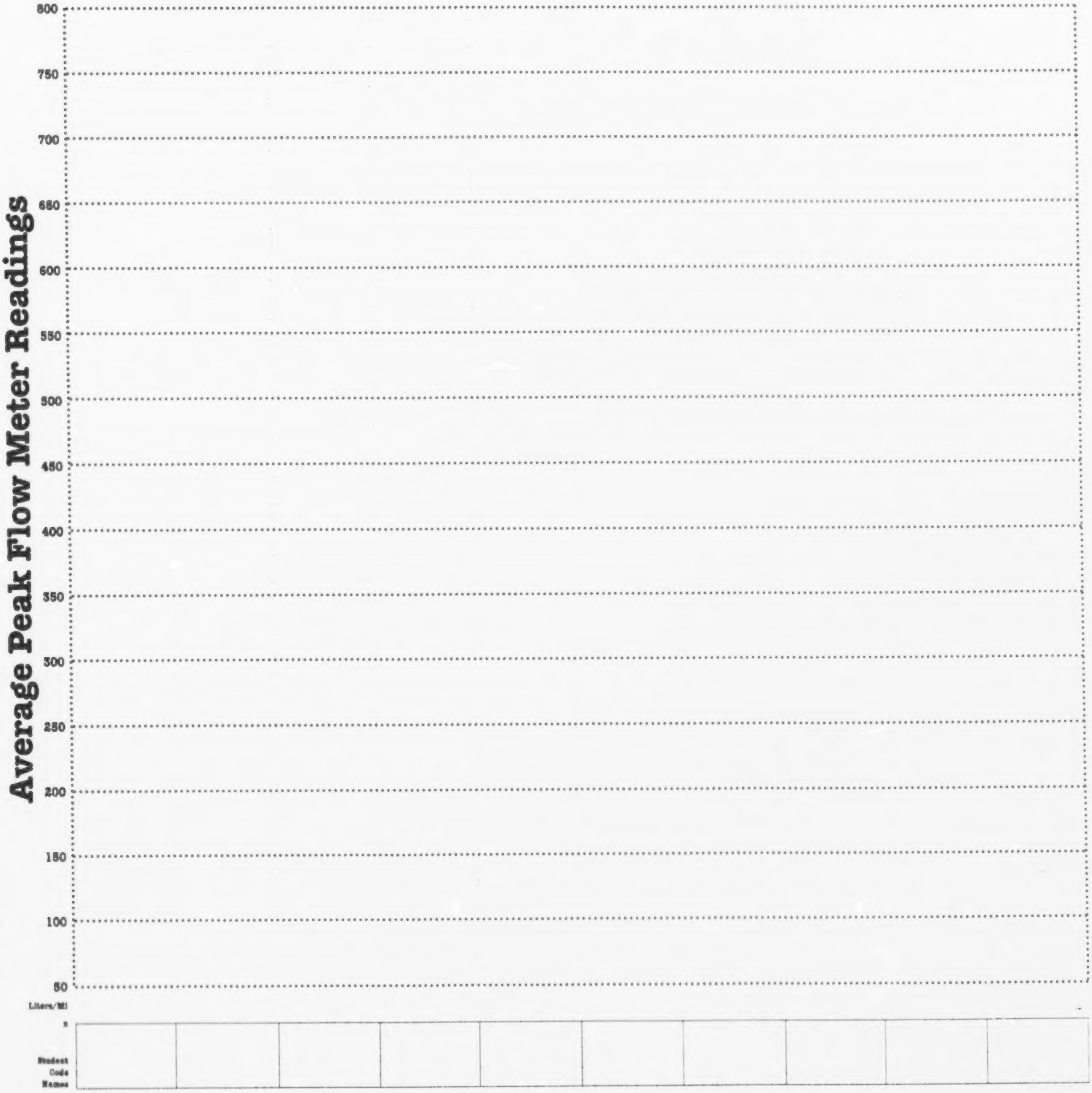


Worksheet #16: Peak Flow Meter Readings: Comparing Age

List student code names from youngest to oldest.

Name/Code ____________________

Date ____________________

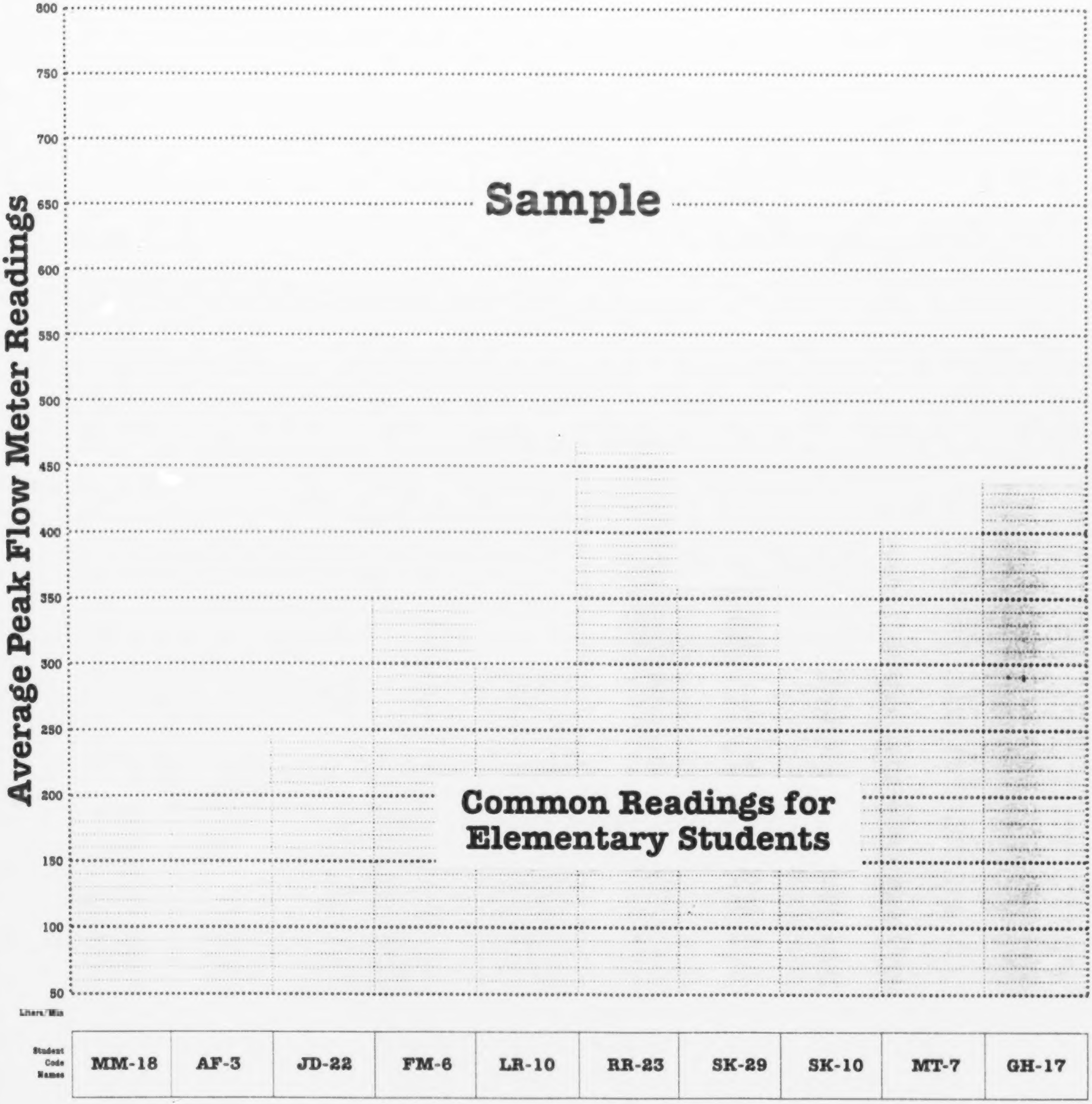


Worksheet #16: Peak Flow Meter Readings: Comparing Age Sample

List student code names from youngest to oldest.

Name/Code ____________

Date ____________



Worksheet #17: Peak Flow Meter Readings: Comparing Height

List student code names from shortest to tallest.

Name/Code ____________________

Date ____________________

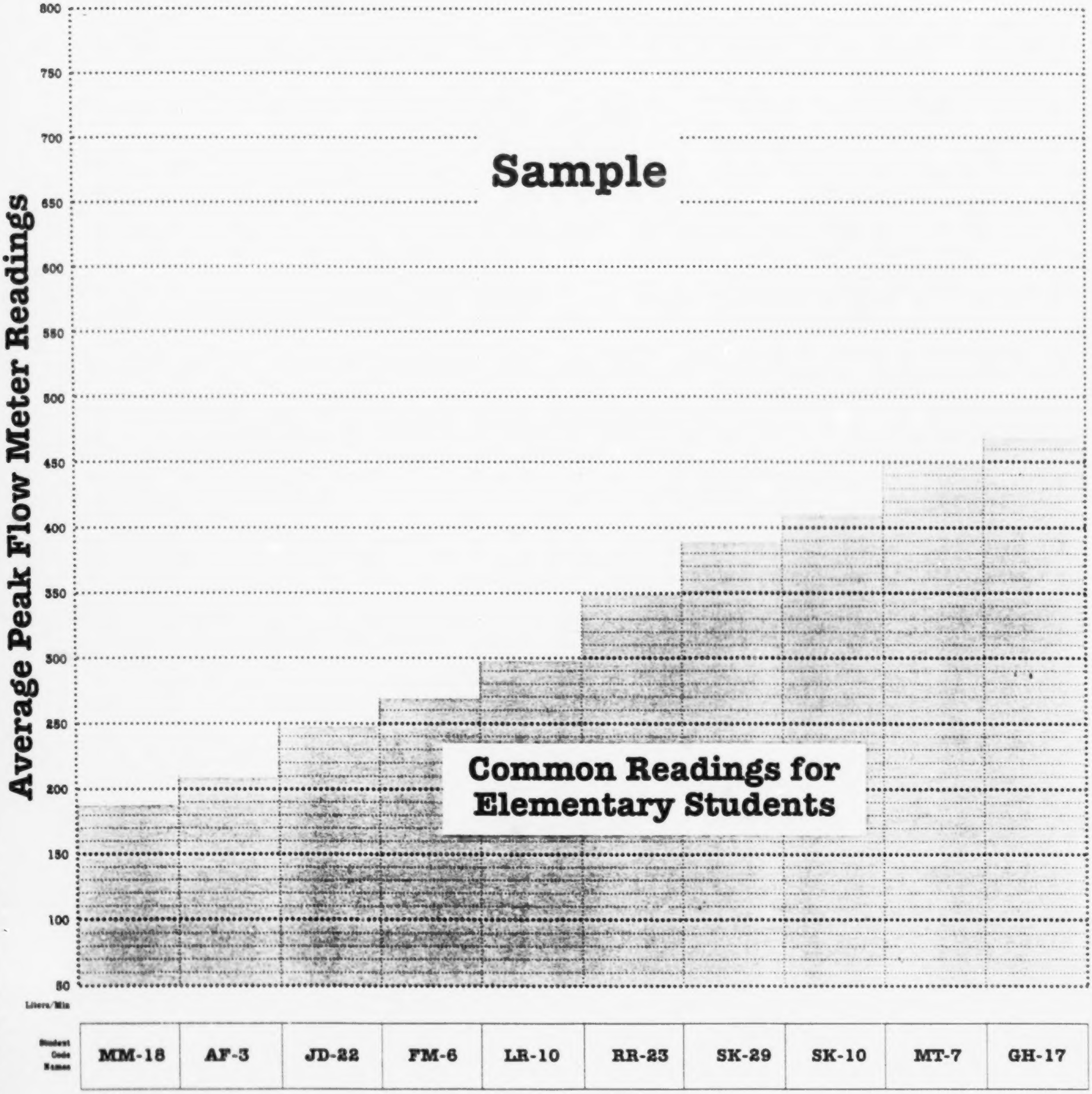
Student Code Names										

Worksheet #17: Peak Flow Meter Readings: Comparing Height Sample

List student code names from shortest to tallest.

Name/Code ________________

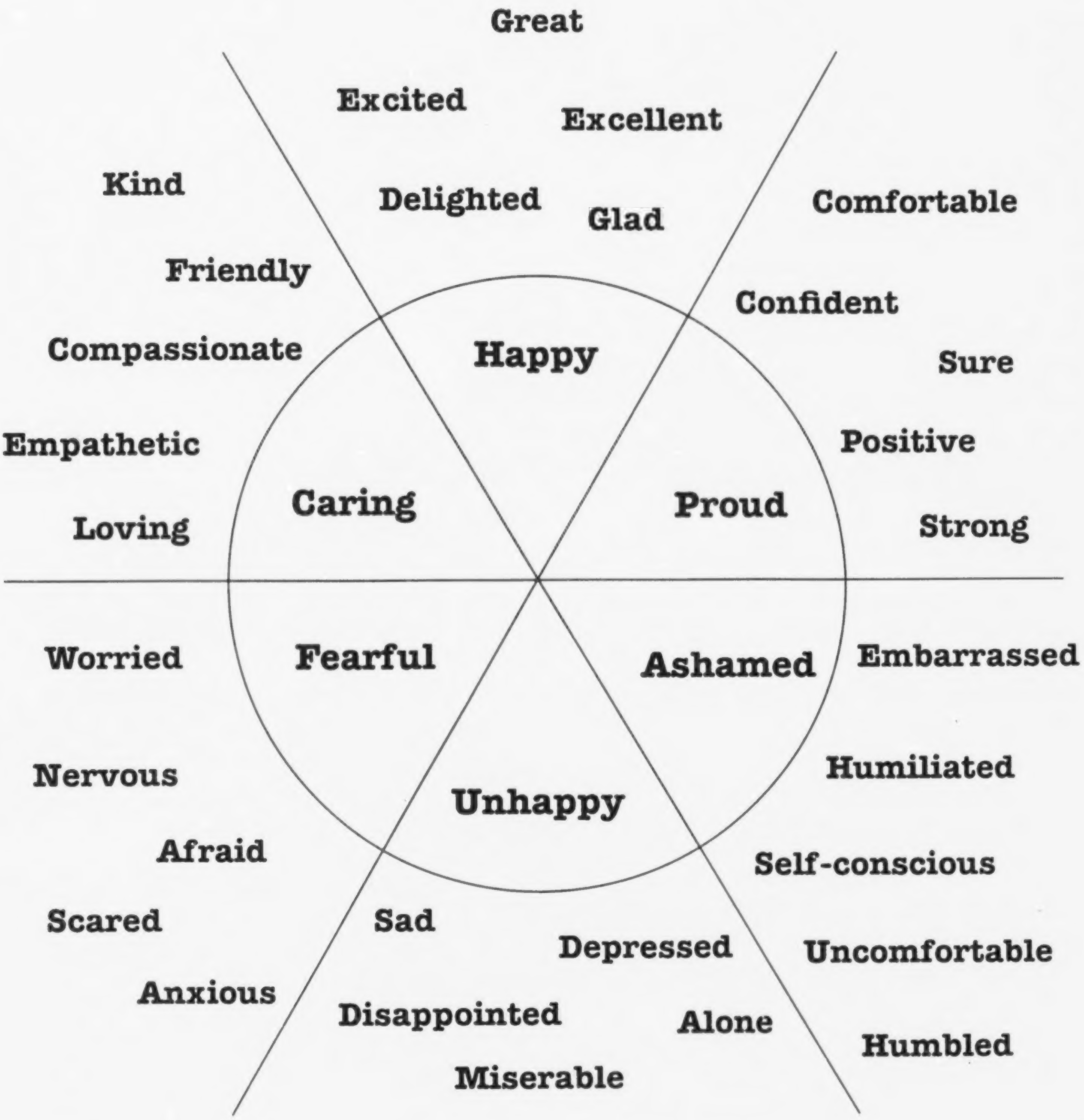
Date ________________



Worksheet #18: How Am I Feeling?

Name/Code ____________________

Date ____________________



Worksheet #19: Asthma Scenarios

Name/Code __________________

Date __________________

1. It is recess time. Everyone is outside on the playground running, climbing on the jungle gym, playing ball, and jumping rope. It is a windy, spring day with lots of pollen in the air. One of the things that brings on Juan's asthma is pollen. Juan is sitting all alone near the school with nothing to do.

2. Keesha's science team wants to learn about caring for animals for their science report. One of the things that brings on her asthma is a furry pet. Without this project the team will not get a good grade.

3. Joey is a new boy to our class. On one of his first days at school he had an asthma episode. Now he never joins the other children at active games during recess and stays to himself.

4. Maria is the best runner in the class relay team — if she remembers to take her asthma medicine to avoid asthma symptoms. She hates to take her medicine because she says it tastes yucky. She also says it makes her feel different and sick. The class really wants to win the school championship.

5. The prize for the winning class in a school contest is to have the school rabbit mascot "Little Bunny" live in the classroom for a month. There are two children with asthma in the classroom.

6. Jennifer is supposed to take her asthma medicine right before lunch. Each day she has to go to the nurse's room to get it, and this makes her a few minutes late getting to the cafeteria. When she gets to lunch she has to sit with a group of younger children because there is no seat with her classmates.

7. Each day when they jump rope before school, Halima sees that her friend Marta cannot seem to catch her breath even long after they have stopped jumping rope.

8. Kadir never has had asthma problems in school, and the teacher doesn't know he has it. The teacher has given Kadir the job of clapping the very dusty erasers. This is one of the things that brings on his asthma.

9. Miguel plays for his class soccer team. Today there is an important game with a rival class. Exercise is one of the things that brings on his asthma. He has forgotten to bring his asthma medicine to school.

10. While putting together a display of old Native American crafts that had many items made of fur, Tran noticed that he could not stop coughing. He remembered that he did the same thing when he borrowed a friend's fur-lined gloves.

Adapted from the National Institutes of Health Heart, Lung and Blood Institute

Worksheet #20: Spelling Math

Spelling + Math = Knowledge

Name/Code ________________

Date ________________

Write the spelling words.	Count the number of syllables.		Count the number of vowels.		Count the number of consonants.		TOTAL
1.		x		+		=	
2.		x		+		=	
3.		x		+		=	
4.		x		+		=	
5.		x		+		=	
6.		x		+		=	
7.		x		+		=	
8.		x		+		=	
9.		x		+		=	
10.		x		+		=	
11.		x		+		=	
12.		x		+		=	
13.		x		+		=	
14.		x		+		=	
15.		x		+		=	
16.		x		+		=	
17.		x		+		=	
18.		x		+		=	
19.		x		+		=	
20.		x		+		=	

Worksheet #21: Asthma Word Find

Name/Code ____________________
Date ____________________

I	N	F	R	N	Q	W	S	H	G	S	J	T	J	Z	D	N
H	H	K	H	E	Y	O	S	U	E	N	P	F	G	L	T	M
R	Y	I	R	G	S	B	P	I	A	Y	L	D	O	B	E	G
E	K	W	U	P	G	P	G	E	E	A	R	C	S	W	F	M
N	G	G	A	S	D	R	I	S	P	T	C	O	Z	X	V	T
I	H	S	O	H	E	A	A	R	W	I	C	T	T	J	N	K
C	K	T	L	L	I	E	H	H	A	S	S	E	I	C	W	I
I	R	R	L	R	S	E	M	A	G	T	L	O	P	V	O	W
D	J	A	W	I	A	M	X	X	R	D	O	A	D	S	E	D
E	H	A	D	L	O	U	H	Y	I	P	O	R	M	E	E	T
M	Y	Y	T	T	A	Y	E	S	L	U	S	W	Y	I	P	R
S	S	H	P	M	P	E	A	K	F	L	O	W	W	K	N	L
G	Y	M	H	F	E	E	L	I	N	G	S	W	D	K	H	A
D	Y	T	E	X	E	R	C	I	S	E	I	Y	E	Q	A	L
S	S	C	O	N	D	I	T	I	O	N	T	J	V	O	J	A
A	C	I	G	A	R	E	T	T	E	S	Z	C	R	H	E	B
K	Y	R	B	Q	B	Q	J	G	N	I	H	T	A	E	R	B

ACTIVE
AIRWAYS
ALLERGIES
ANIMALS
ASTHMA
BREATHING
CIGARETTE
COLD
CONDITION
DISEASE
DOCTOR
EPISODE
EXERCISE
FEELINGS
HEALTHY
MEDICINE
PEAKFLOW
RESPECT
RESPIRATORY
SYMPTOM

Please write your spelling words in cursive as you find them. Thank You!

1. ____________________
2. ____________________
3. ____________________
4. ____________________
5. ____________________
6. ____________________
7. ____________________
8. ____________________
9. ____________________
10. ____________________
11. ____________________
12. ____________________
13. ____________________
14. ____________________
15. ____________________
16. ____________________
17. ____________________
18. ____________________
19. ____________________
20. ____________________

Worksheet #22: Friends Helping Friends

Name/Code __________________

Date __________________

Your group will produce a one-act play that teaches other students how to respond if a friend is having breathing problems. You will need to develop your story and put your story in the play format discussed in class. You have one class period to develop your rough draft. When your play is in rough draft form, show it to your teacher. Type or neatly print your final draft.

You will need to gather or make the props needed for your play. Practice the play until the actors can recite the lines without looking at the script. Practice placing your props in your scenes, and how the characters will move.

You will present your play on __________________________.

Script Starters:

What is the situation that needs to be solved?

What is the setting?

What added problems make this situation more difficult?

Who are the main characters?

Who are the minor characters?

What is the solution to the problem?

What is the information you want your audience to gain from your play?

Asthma Resources

This section contains organizations you can contact for more information about asthma, as well as a listing of books, videos, and other teaching materials you can use in your classroom to support asthma education.

Organizations **94**

Books, Guides, Curriculum and Videos for Teachers **95**

Books for Children **98**

Videos For Children **99**

Organizations

Allergy and Asthma Network/Mothers of Asthmatics, Inc. (AAN-MA)
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Nonprofit organization devoted to helping families overcome hardships of asthma. Provides educational information about medical advances and quality resources. A monthly newsletter, videos and brochures are available for a nominal fee.

American Lung Association (ALA)
American Thoracic Society (ATS)
1740 Broadway
New York, NY 10019-4374
(212) 315-8700 or (800) 587-4872 (national headquarters)
(800 LUNG-USA for connection to nearest local office)
(212) 265-5642 (fax)

Offers asthma education through its national network of state and local offices. Includes publications, support groups, community-based asthma programs and camps.

American Lung Association of Minnesota
490 Concordia Avenue
St. Paul, MN 55103
(651) 227-8014
(800 LUNG-USA for connection to nearest local office)
(651) 227-5459 (fax)

Offers a variety of educational programs for families living with asthma. The Open Airways Family Asthma Program is for families of children of all ages and the Preschool Family Asthma Program is for families of children ages 3 to 5. Programs connect parents, children and health professionals in their own communities with fun, informative and supportive events and activities. Publications about children's asthma relate to a diverse group of children. An Asthma Update Newsletter is available.

Asthma and Allergy Foundation of America (AAFA)
1125 15th Street NW, Suite 502
Washington, DC 20005
(202) 466-7643
(800) 7-ASTHMA
(202) 466-8940 (fax)

Offers patient education programs. Also has a bimonthly newsletter, videos and brochures about asthma and allergies.

National Asthma Education and Prevention Program (NAEPP)
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

Information resource for patients and their families, school personnel and health care professionals. Extensive reading and resource lists are available (generally free or at minimal charge).

National Jewish Center for Immunology and Respiratory Medicine
Lung Line
1400 Jackson Street
Denver, CO 80206
(303) 388-4461
(800) 222-LUNG
(303) 270-2162 (fax)

Offers patient education materials and provides an information service called "Lung Line" staffed by registered nurses specializing in respiratory and immune system disorders.

Books, Guides, Curriculum and Videos for Teachers

Asthma and Physical Activity in the School. A booklet for physical education teachers and activity monitors that gives guidance on how to understand and interact with the child with asthma. Calls for judgement in deciding when to include the child in activities and when the activity must be adapted to the status of the child's asthma. Encourages a sensible, middle ground rather than the two extreme approaches of always excluding the child or always pushing the child with asthma to the maximum. Covers the role of prescribed medicines, especially during gym class. Includes steps for monitoring asthma with a peak flow meter and proper use of inhalers, as well as how to recognize the onset of symptoms that require prompt action. Publication No. 2651. $2.00.

Contact: National Asthma Education and Prevention Program
NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

Asthma Explorers Education Program. The Asthma Explorers Club, an educational program for children ages 6 to 12, includes a variety of materials, including a storybook, self-monitoring calendar, and instructional activity books. Membership is free and lasts for one year. Call for bulk orders of enrollment sheets.

Contact: Fisons Pharmaceuticals
P.O. Box 1766
755 Jefferson Road
Rochester, NY 14603
(800) 982-3902

Asthma Awareness: Curriculum for the Elementary Classroom. Developed for use with children at all elementary grade levels, this curriculum has lessons that can be easily integrated into a health education or science curriculum. Single copy free. Publication No. 93-2894. $5.00.

Contact: National Asthma Education and Prevention Program
NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

How Asthma-Friendly is Your School? Parents and school staff will find this two-page resource useful for determining how well their school accommodates children with asthma. A seven-item questionnaire helps identify sources of problems in schools for children with asthma. Also provided is an extensive resource list for guidance in making school policies and practices more asthma-friendly. Publication No. 55-830. Single copy free.

Contact: National Asthma Education and Prevention Program
NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

Making a Difference... Asthma Management in the School (#V465-01)* A 13-minute video for in-service teacher and staff trainings. Filmed in schools with real principals and real teachers. The video would have special interest for physical education teachers, sports coaches, recess monitors and general classroom teachers. It tells how school conditions and activities affect asthma, what to do for the child with asthma at school, and how the child with asthma can participate as much as possible in school activities. Publication No. 55-643. Free while supplies last.

Contact: National Asthma Education and Prevention Program
NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

Managing Asthma: A Guide for Schools. This kit contains handouts for principals, guidance counselors, classroom teachers, physical education teachers, and school nurses that explain childhood asthma and how each staff member can work effectively with the child who may have asthma in the school setting. Publication No. 2650. $3.00.

Contact: National Asthma Education
and Prevention Program
NHLBI Information Center
P.O. Box 30105
Bethesda, MD 20824-0105
(301) 251-1222
(301) 251-1223 (fax)

My Body. Patricia Carratello. This book is designed to provide information about the human body for the primary grade child. Parts of the human body are explained and illustrated. These illustrations can be used to make a full-size tracing of each child's body on paper. $8.00.

Contact: Teacher Created
Materials, Inc.
P.O. Box 1040
Huntington Beach, CA 92647

Open Airways for Schools. This educational package is designed for children ages 8 to 11 years and includes an instructor's guide, curriculum, handout slicks, and a list of association affiliates. The package also includes a flip chart of colorful posters that depict a culturally diverse group of children in urban, rural, and suburban settings. Single copy $29.95.

Contact: American Lung Association
(ALA)/Open Airways for Schools
Program
P.O. Box 1036
Evans City, PA 16033
(800 LUNG-USA will connect you to
your local office)

What Every Educator Should Know About Asthma. This 30 page booklet is full of good information about basic lung function, asthma, inhalers, managing exercise, teaching about relaxation and self care. It includes an appendix on peak flow meters and predicted peak flow meter readings by height and sex. Priced at $1.60 each.

Contact: American Lung Association
1740 Broadway
New York, NY 10019-4374
(212) 315-8700
(212) 265-5642 (fax)
(800 LUNG-USA will connect you to
your local office)

Books for Children

Aiello, Barbara (1990). **Hometown Hero**. Fifth-grader Scott reveals in his diary how he copes with his asthma and the outcome of his encounter with a homeless person in the library. Includes questions and answers about asthma and its treatment.

Publisher: Twenty First Century Books, Frederick MD. Currently out of print, check public libraries.

Alden, Joan (1993). **A Boy's Best Friend.** Will, a seven year old with asthma, wants nothing at all for his birthday if he can't have a dog. He sees his birthday come and almost go without a gift. At the last hour, Will's two moms present him with a dog who will make a difference by being different.

Publisher: Alyson Publishing.

Allen and Hanburys (1985). **Asthma and You!** Coloring book illustrates and describes respiration, asthma, use of an inhaler, warning signs of asthma trouble and what to do if an asthma episode occurs. Also features crossword puzzles.

Contact: Allen and Hanburys
Division of Glaxo, Inc.
Five Moore Drive
Research Triangle Park, NC 27709
(919) 248-2100

Allen and Hanburys (1993). **Captain America: Return of the Asthma Monster.** Comic book featuring Captain America coming to the rescue of culturally diverse groups of children.

Contact: Allen and Hanburys
Division of Galaxo, Inc.
Five Moore Drive
Research Triangle Park, NC 27709
(919) 248-2100

American Lung Association (1992). **Best of Superstuff.** Activity booklet for children ages 6 to 8. Features games, puzzles and riddles designed to provide a fun way for children to learn about asthma management.

Contact: American Lung Association
1740 Broadway
New York, NY 10019-4374
(212) 315-8700
(national headquarters)
(800 LUNG-USA will connect you to your local office)
(212) 265-5642 (fax)

Getz, David (1991). **Thin Air.** Sixth grader Jacob Katz struggles to overcome his asthma and the attentions of his overprotective brother as he tries to find a place among his peers.

Publisher: Henry Holt. Currently out of print, check public libraries.

Goldstein, Margaret (1994). **Jackie Joyner Kersee, Superwoman.** Chronicles the life of the track and field star who has asthma. Tells of her medal-winning performance in three Olympics.

Publisher: First Avenue Editions

Martin, Ann M. (1995). **The Babysitters Club #90 — Welcome to the BSC, Abby.** Trying to help her hard-working father and twin sister to adjust to life in Stoney Brook, Abby Stevenson, who has asthma, becomes the newest member of the Baby-Sitters Club and shares her first adventure.

Publisher: Scholastic, Inc.

Plaut, Thomas (1997). **One Minute Asthma: What You Need to Know.** Booklet covers basics of asthma and discusses medications and devices used to manage asthma. Written at a 6th grade reading level.

Publisher: Amherst, Pedipress, Inc.

Richard, M. and Schneider, S. (1994). **You Can Control Asthma: A Book for the Family.** Workbook with multicultural illustrations. Addresses major issues faced by parents of children with asthma.

Publisher: Georgetown University, Washington DC.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Richard, M. and Schneider, S. (1994). **You Can Control Asthma: A Book for Kids.** Workbook for children ages 6-12. Multi cultural illustrations and games explain asthma control techniques, decision making and playing sports.

Publisher: Georgetown University, Washington DC.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Sander, Nancy (1990). **I'm a Meter Reader.** Illustrates how becoming a peak flow meter reader can help children do the things they enjoy.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Sanders, Nancy (1988). **So You Have Asthma, Too!** Booklet for children illustrating a 7 year old girl discussing asthma and how it does not have to limit what children can do.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Videos For Children

Asthma Super Stars
Features children experienced in managing asthma, athletes who perform with excellence and leading medical experts offering advice and encouragement.

Contact: Asthma and Allergy
Foundation of America
1125 15th Street NW
Suite 502
Washington, DC 20005
(202) 466-7643
(800) 7-ASTHMA
(202) 466-8940 (fax)

*Videos marked with an asterisk are loaned free of charge to any organization in the state of Minnesota by the Minnesota Department of Health. The catalog numbers (#V484-01) for the videos listed are provided for ordering purposes.

Free to Breathe: Inhaler Use for Children with Asthma
(#V483-01)* An educational video demonstrating four ways children and teens can use asthma inhalers. Features a culturally diverse cast.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

I'm a Meter Reader
(#V475-01)* This book and video set is a fun story that introduces children to using a peak flow meter. It shows how children can learn to manage their asthma better based on their peak flow meter readings.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Roxy to the Rescue (#V448-01)*
This 3-D animated and live action video helps adolescents and children cope with asthma and comply with treatment. Urban environment. Young Roxy plays detective to discover what mysterious illness is preventing her older cousin from playing basketball.

Contact: Milner-Fenwick, Inc.
2125 Greenspring Drive
Tinonium, MD 21093
(800) 432-8433

So You Have Asthma, Too
(#V474-01)* A colorful book and video set that will delight younger children. Lung anatomy is described along with the changes that occur with asthma. Triggers are addressed.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

Wheeze World (#V484-01)* Based on the movie "Wayne's World", this zany video spoof teaches children about asthma medications and when to use them.

Contact: Allergy and Asthma
Network/Mothers of Asthmatics, Inc.
3554 Chain Bridge Road, Suite 200
Fairfax, VA 22030-2709
(703) 385-4403
(800) 878-4403
(703) 352-4354 (fax)

To request an order form or a catalog of the complete library of public health films and videos, contact:

Minnesota Department of Health
R.N. Barr Library
717 Delaware St. S.E.
Minneapolis, MN 55440-9441
(612) 676-5478

Published by the Minnesota Department of Health

To obtain a copy of **Asthma Education: An Integrated Approach, Ideas for Elementary Classrooms**, write, fax or phone your requests to:

Minnesota Department of Health Library
717 Delaware Street Southeast
P.O. Box 9441
Minneapolis, Minnesota 55440
Phone: (612) 676-5274
Fax: (612) 676-5274
E-mail: library@health.state.mn.us

This book may be reproduced.

Upon request, we will provide this information to you in another form such as Braille, large print, or audio tape. Requests should be directed to (800) 728-5420.

Writing and editing by Kathy King Communications
Graphic Design by Kristine Thayer

Printed on recycled paper
with a minimum of 10%
postconsumer waste.

HealthPartners®

HealthPartners
8100 34th Avenue South
P.O. Box 1309
Minneapolis, MN 55440-1309

MINNESOTA
MDH
DEPARTMENT OF HEALTH

Minnesota Department of Health
717 Delaware St. SE
P.O. Box 9441
Minneapolis, MN 55440-9441